

JOURNAL: INDEX OF SUBJECTS, 1961

A

Acacia species, 4-hydroxypipelic acid and its stereoisomers from, 189.

Acacia intertexta, new leucoanthocyanidin (teracacidin) from, 499.

Acetaldehydes, α -allylated, prep., 4092.

Acetamide complexes of uranium, neptunium, and plutonium, prep., 1611.

Acetamides, substituted 2,4-dichlorophenoxy-, rates of alkaline hydrolysis, 2335.

Acetanilide, and nuclear substituted derivatives, dipole moments and preferred conformation of the acetylamino-group, 4700.

Acetic acid, alkyl esters, and corresponding lactones, kinetics of hydrolysis, 47.

trichloro-, reaction with cyclopentadiene, rôle of carbonium ions in, 1946.

fluoro-, ethyl ester, methylene reactivity in, 3537.

trifluoro-, studies of. Part XVIII, 1771.

9-methyl-6-oxo- $\Delta^4(10)$ -1-octalyl-, prep., 4211.

o-nitrobenzoyl-, methyl and ethyl esters, base-catalysed condensation products of, 5205.

phenyl-, ionisation constant at 25°, 275.

Sodium hydrogen diacetate, crystal structure, 1164.

Acetic acids, *o*- and *p*-chlorophenoxy-, metabolism by *Aspergillus niger*, 5397.

phenyl-, dissociation: influence of pressure on the Hammett reaction constant, 1093.

halogenated, relative efficiencies as Friedel-Crafts co-catalysts, 1453.

Acetic anhydride, hydrolysis of. Part VI, 2305. Part VII, catalysis by pyridine and methylpyridines in acetate buffers, 4362.

kinetics of hydrolysis in deuterium oxide solution, 2305.

Acetimidates, reaction with acid esters of phosphoric acid, 1805.

Acetoacetic acid, $\gamma\gamma\gamma$ -trifluoro-, ethyl ester, cyanohydrins of, 4519.

Acetone, hexafluoro-, thermal decomposition, 1388.

o-nitrobenzoyl-, base-catalysed condensation products of, 5205.

Acetones, perhalogeno-, photolysis, 3015.

Acetonitrile, methyleneamino-, condensation with aldehydes, 1066.

Acetophenone oxime, 2-bromo-5-nitro-, α - and β -form of, effect of polyphosphoric acid on, 4209.

Acetylating agents, Friedel-Crafts, interaction with decalin. Parts III, IV, 3828, 3835.

Acetylene-cyclopentadienylnickel complexes, prep., 577.

Acetylenes, complexes with platinum(II). Part I, alkynes, 827.

Polyacetylenes, biosynthesis. Part III, 1654. Part IV, rate of synthesis by Basidiomycete B.841, 3544.

Acetylenic acids, long-chain, new prep., 351.

compounds related to stilbestrol. Parts III, IV, 1311, 2291.

$\alpha\beta$ -Acetylenic acid, enzymic decarboxylation of an, 1532.

Acetylenedicarboxylic acid, dimethyl ester, adducts with triphenylphosphine, 2126.

dimethyl ester, reaction with methyl pyrrole-1-carboxylate, 457.

Acid, an $\alpha\beta$ -acetylenic, enzymic decarboxylation, 1532.

Acid-base function in non-aqueous solution. Part II, 417.

Acid chlorides, mechanism of hydrolysis. Part VII, 3748.

Acids, acetylenic, long-chain, new prep., 351.

aliphatic and aromatic carboxylic, comparison as Friedel-Crafts co-catalysts for stannic chloride, 3822.

Acids, alkenoic, ω -aryl, cyclisation of, 206.

amino-, of the cyclohexane series. Part I, 4372.

structurally related to glutamic acid, deamination by nitrous acid, 3284.

Enzymic resolution of serine, 763.

α -anilino-carboxylic, open-chain, pyrolysis, 1782.

aryl carboxylic, and their esters, infrared spectra, 106.

N-carboxy- α -amino-, anhydrides of, initiation step in polymerization. Part I, catalysis by tertiary bases, 4989. Part II, effects related to the structure of amine inhibitors, 4992.

fatty, essential. Parts I, II, 2779, 5270.

α -hydroxy, kinetic resemblance between oxidation of pinacol and its monomethyl ether and, 630.

long-chain, prep. Part II, 4409.

monobasic, crystal structures of acid salts of. Parts V, VI, 1151, 1164.

cis-olefinic, pure, attempts to prepare, 351.

polycarboxylic, amino-, chelates formed with tin(II), 2554.

straight-chain monocarboxylic, heats of sublimation, 1048.

tertiary, derivatives of, reactions with aromatic compounds. Part XII, 68.

Acidity function (H_0), in ethylene glycol and ethylene glycol-water mixtures, 3998.

Acridine, 3-hydroxy-9-phenyl-, tautomerism in, 1191.

Benzacridines and other nitrogen-heterocyclic derivatives of *m*-ethylaniline, prep., 4836.

Acrylic acids, $\alpha\beta$ -dialkyl-, simple prep., 3160.

Acrylonitrile, polymerisation of, methyl glycosides as transfer agents in, 3308.

reaction with some isoquinoline derivatives, 4939.

Actinide tetrachlorides, acetamide complexes of. Part I, 1611.

Activation parameters for S_N1 solvolysis in 50% aqueous acetone, 2045.

Active solids, production by thermal decomposition. Part XIII, 1252.

Activity coefficients, of aqueous solutions of choline chloride at 25°, 3100.

of non-electrolytes in aqueous solutions of sugars, 4906.

Acylation. Part II, 5404.

Friedel-Crafts, with stannic chloride as catalyst, in solvents of low dielectric constant, 5404.

intramolecular, 2520.

Acylium perchlorates, reaction with olefins, 3573.

Adenosine-5' pyrophosphate, oxidative phosphorylation leading to, 722.

Adifoline (an alkaloid from *Adina cordifolia*), 2714.

Adina cordifolia, an alkaloid (adifoline) from, 2714.

Adrenochrome, formation of melanin from, 52.

Adsorption, studies in. Parts XII, XIII, 58, 93.

on inorganic solids, anomalous (endothermic) effects of, 93.

Afraegle paniculata mucilage, composition, 5234.

Akuamma, alkaloids of. Parts II, IV, 152, 1458. (Part III, *Proc. Chem. Soc.*, 1960, 215.)

Akuammicine, structure, 152.

decomposition in methanol, 1458.

β -Alanine, α -fluoro-, prep., 4669.

Alantolactones, tetrahydro-, from reduction of helenin, interrelation, 4721.

Alaternin (a quinone), prep., 485.

Albizzia zygia (Macbride), gum exudate of, structural studies, 3908.

Albumin of egg, synthetic studies relating to the carbohydrate-protein linkage, 4872.

- Alcohols**, acetylenic, prep. from α -alkyldeoxyanisols and the α -alkyl- β -ethynylstilbenes, 1311.
aliphatic nitro-, infrared absorption. Part I, 1370.
monohydric nitro-, and their chloro- and bromo-derivatives, infrared spectra, 1370.
sugar, prep. of ω -di-*O*-methanesulphonyl derivatives, 3656.
- Aldobiuronic acid** isolated from *Fagaria xanthoxyloides* gum, 3166.
- D-Aldohexosides**, methyl 4,6-*O*-benzylidene-, intramolecular hydrogen bonding in, 3617.
- Aldoximes**, quaternary, spectroscopic studies, 2162.
- Aldrin-isodrin series**, cyclisations and rearrangements in, 4809.
- Alga** (*Nitella translucens*), starch-type polysaccharide from, 2914.
red (*Porphyrumbilicalis*), carbohydrates of, 1590.
- Alginates**, counter-ion fixation in, 5198.
of sodium, potassium, and magnesium, influence of counter-ion fixation on molecular weight and shape, 3975.
- Alicyclic studies**. Parts XV—XVIII, 1498, 1505, 1512, 1514.
- Aliphatic compounds**, free-radical substitution in. Part III, 3520.
- Alkaloids**, of akuamma. Parts II, IV, 152, 1458. (Part III, *Proc. Chem. Soc.*, 1960, 215.)
of the Amaryllidaceae. Part IX, 4038.
aporphine, structural correlations in nuclear magnetic resonance spectra with bisbenzylisoquinoline alkaloids, 1896.
bisbenzylisoquinoline. See previous entry.
from *Callichilia* species, 2587.
from *Solanum*. Part XV, 4645.
from *Ipacacuanha*. Part VII, 3899.
tropane, stereochemistry. Parts XIII, XIV, 3219, 3222.
Adifoline, from *Adina cordifolia*, 2714.
Clavine, from *Aspergillus fumigatus* Fres., 2085.
Graveoline, from *Ruta graveolens*, prep., 4360.
Indicine, from *Heliotropium indicum* L., 5400.
Supinine, from seeds of *Trichodesma zeylanicum*, R.Br., 484.
- Alkanes**, lower, and cyclopropane, rates of oxidation of binary mixtures containing, 782.
- Alkoxy-radicals**. Part I, 1788.
- Alkoxy radicals**, alicyclic, in thermal decomposition of cyclohexyl and 1-methylcyclohexyl nitrite, 2620.
- Alkyl halides**, reactions with carbene, 1495.
- Alkynes**, complexes with platinum(II), 827.
- Allenes**, tetra-aryl-, new synthetic route to, 2687.
- Allose**: 3-Acetamido-3-deoxy-D-allose diethyl dithioacetal, prep. and its oxidation by peroxypropionic acid, 1643.
- Allyl halides**, kinetics of neutral hydrolysis, 1596.
- Allylbenzene**, di- and tri-acetylation of, 3564.
- Allylic carbonium ions**, 1.
- Alternaric acid**. Part V, biosynthesis, 522.
- D-Altrose**, 3-acetamido-3-deoxy-, derivatives of, prep. and conversion into 2-acetamido-2-deoxy-D-ribose, 1463.
- L-Altrose**, 6-deoxy-2,5-di-*O*-methyl-, conversion of 2,5-di-*O*-methyl-L-rhamnose into, 4649.
- Alumina**, chromatographic, mechanism of adsorption of aromatic hydrocarbons by, 58.
- Aluminium**, tropylium complex halide salts of, 2320.
chloride, action on some α -alkylbenzenesulphonic acids and α -alkyldiphenyl sulphones, 4514.
 $Al_2Br_6 \cdot C_6H_6$ complex, crystal structure, 3867.
- Amaryllidaceae**, alkaloids of. Part IX, 4038.
- Amides**, of the "nitrogen mustard" type, prep., 2365.
thio-, hydrogen bonding in, 957.
thio-, prep. by extensions of the Kindler reaction, 1194.
- Amidines**, chemotherapeutic, search for. Parts XVIII, XIX, 1029, 5097.
4,4'-Diamidinodiphenylamines, substituted, prep., 1029.
- Amidinium chlorides**, α -hydroxy-, resolution by use of mandelic acids, 3181.
- Amination**, direct, of mesitylene by hydrazoic acid in concentrated sulphuric acid, 4685.
- Amines**, characterisation by use of (–)-di-*O*-*p*-toluoyltartaric acid, 4675.
polarisation in benzene and carbon tetrachloride, 2974.
aliphatic, mechanism of reaction with carbon tetrachloride, 2261.
- Amines**, aliphatic, reaction with molybdenum(V) chloride, 24.
N-arylglycosyl-, isomeric, prep., 323.
N-arylhexasyl- and aryl-, transglycosylation, paper-chromatographic investigation, 320.
4,4'-diamidinodiphenyl-, substituted, prep., 1029.
2-halogenoethyl-, di-*N*-substituted. Parts IV, V, 1076, 1291.
2-halogenoethyl-, *NN*-bis-2'-aryloxyethyl, prep., reactivity, and pharmacology, 1076.
heterocyclic tertiary, double methopierates, prep., 3845.
2-hydroxyethyl-, *NN*-substituted, stability constants of silver complexes of, 3169.
 β -hydroxyphenethyl-, hydramine fission of, 4576.
diphenyl-, substituted 4,4'-diamidino-, prep., 1029.
tertiary, interaction with phosphorus pentachloride, 1730.
Cyclohexylamine, deamination by [^{18}O]nitrous acid, 761.
Diethylenetriamine, heats and entropies of reaction with transition-metal ions, 2994.
N-Methyl-di-(2-chloroethyl)amine, reaction with thio-sulphate, 679.
Triethylenetetramine, heats and entropies of reaction with transition-metal ions, 5115.
- Amino-**, methylamino-, and dimethylamino-groups, mesomeric moments of, 81.
- Amino-compounds**, acetyl-, dipole moments, and preferred conformation of the acetylamino-group, 4700.
- Amino-radical**, dimethyl- ($\cdot NMe_2$), reactions, 1228.
- Amino-sugars**, and related compounds. Part VIII, 1204.
- Ammonia**, liquid, glow-discharge electrolysis in, formation of hydrazine by, 5177.
liquid, contact glow-discharge electrolysis of, 5186.
- Ammonium salts**, heterocyclic quaternary, dimethinecyanine salts from 1-formylazulenes and, 163.
- Ammonolysis** of hexahalogenotitanates, 95.
- Amoebicidal activity**, chemical constitution and. Part VI, 4711.
- Amylopectin-iodine complexes**, absorption spectra, 1183.
- Analysis**, organic, submicro-methods. Part XIII, 480.
- 5 α - and 5 β -Androstane**, 3-aza- and 4-aza- α -homo-, prep., 3641.
- 5 α -Androstan-3-one**, 17 β -hydroxy-11 β -methyl-, prep., 2091.
17 β -hydroxy-11-methylene-, prep., 2091.
- Anhydrides**, of *N*-carboxy- α -amino-acids, initiation step in polymerization of. Part I, catalysis by tertiary bases, 4989. Part II, effects related to the structure of amine inhibitors, 4992.
cyclic, in sulphuric acid, 2191.
perfluoro-carboxylic, reaction with *N*-aroylglycines, 1771.
- Aniline**, competition with phenol for triphenylmethyl cation, 575.
p-bromodimethyl-, Grignard reagent from, prep., 465.
m-ethyl-, benzacridines and other nitrogen-heterocyclic derivatives of, prep., 4836.
2,5-diethyl-, prep. from Friedel-Crafts reaction on *o*-ethyl-acetanilide, 384.
p-iodo-, mechanism of protodeiodination, 822.
NN-dimethyl-, steric repression of the mesomeric effect in derivatives of, 81.
- Anilines**, substituted, heat of ionization, 2572.
substituted, ionisation constants of, 388.
 α -Anilino-carboxylic acids, open-chain, pyrolysis, 1782.
Benzanilides, *N*-alkyl-2-amino-2'- and -4'-methoxy-, abnormal reactions of diazonium salts from, 232.
- Anilino-radical**, a stable, 3540.
- Anion-exchange resin**, adsorption of uranyl sulphate from 20% methanol by, 1819.
- Anisols**, α -alkyldeoxy-, prep. of acetylenic alcohols from, 1311.
- Anisole**, acetylation by acetic acid in presence of boron trichloride, kinetics, 1676.
- Anisoles**, kinetics of bromination of, 63.
3-alkyldihydro-, base-catalysed isomerisation, 5376.
- Anogeissus schimperi* gum, constitution, 3461.
- Anthracene**, reactions with oxygen and thiols, 1304.
hydroxy-, series. Part IV, 4682.
9-methyl- and 9,10-dimethyl-, isomeric amido- and amino-derivatives of, prep. and stereochemistry, 588.
Bi(anthracene-9,10-dimethylene), prep., 3741.
- Anthracenes**, 10,9-borazaro-, prep., 425.
substituted, transmission of polar effects in, 2221.

- Anthraquinone**, some derivatives of, prep., 4682.
4,5,7-trimethoxy-2-propyl-, prep., 4691.
- Antibiotics**, carbohydrate components of. Part I, 4831.
- Antimony trichloride**, solutions of organic chlorides in, conductance data at 75°, 1711.
halides, as solvents. Part II, 1711.
Stibine, conductimetric titration with sodium in liquid ammonia, 2676.
- Antimycin-A complex**, structure, 889.
- Anti-purines**, potential. Part IV, 3818.
- Anti-tumour agents**, potential. Part I, 936.
- Antiviral agents**, prep. Part I, 243.
- Antrycide** (quinapyramine), bisquaternary salts related to, 5275.
- Ants**, black cocktail, insect repellent from, 488.
- Apurinic acids**, alkaline degradation, 1903.
- Aquation**, octahedral, mechanism and steric course. Part IV, 4637.
- L-Arabinitol**, 1,3-*O*-benzylidene-, configuration at the benzylidene acetal carbon atom, 5005.
- Arachidonic acid**, prep., 2779.
- Arenes**, polyfluoro-. Parts III; IV, 2204, 3719.
- Aromatic compounds**, reactions with derivatives of tertiary acids. Part XII, 68.
alkyl-, oxidation in aqueous hydrogen bromide, 4082.
polyfluoro-. Part IX, 1574.
hydrocarbons, steric effects on spectra of, 2063.
polynitro-, complex formation in pyridine solutions of, 4886.
molecules, nonacyclic, electron-donor and -acceptor complexes with, 2110.
nucleus, cumulative effect of substituents on reactions in the side-chain, 4744.
reactivity. Parts XII—XXI, 297, 247, 542, 1012, 2388, 3715, 4921, 4927, 5077, 5082.
systems, electron-donor and -acceptor complexes with. Parts VII, VIII, 4948, 4958.
transmission of polar effects through. Parts I—III, 2221, 2938, 3247.
- Aromaticity**, studies by nuclear magnetic resonance spectroscopy. Part I, 859.
- Arsenic analogues of aminodiarylboranes**, prep., 1000.
carboxylic acids containing, 1398.
ligands, some new polydentate, 3167.
Arsenates. Part I, 39.
Arsenic acid-chromium(III) system, 39.
Arsine, conductimetric titration with sodium in liquid ammonia, 2676.
Arsine, carboxymethylchloro-, and related carboxylic acids containing arsenic, 1398.
Arsine, tritertiary, complexes of nickel, palladium, and platinum, 4433.
Arsine, a tetra-tertiary, complexes with transition metals, 4269.
Arsine oxide analogues, complexes of copper(II) with, 2298.
Arsine oxide, triphenyl-, as ligand in tetrahedral complexes of manganese(II), 3735.
Arsinophosphonium salts, prep., 3208.
Diarsines, cyclic. Part VI, 2762.
Diarsonium dihydroxides and dibromides, cyclic quaternary, thermal decomposition, 2762.
Sn—O—As(v) linkages, preparation of monomers and polymers containing, 445.
Triphenylarsine oxide, molybdenum(II) complexes containing, 750.
- Arylation of benzotrihalides**, 554.
- DL-Aspartic acid hydrochloride**, γ -irradiated, electron-spin resonance spectrum of $\cdot\text{CH}(\text{CO}_2\text{H})\cdot\text{CH}_2\cdot\text{CO}_2\text{H}$ in, 4264.
- Aspergillus fumigatus** Fres., isolation of festuclavine and two new clavine alkaloids from, 2085.
- Aspergillus niger**, metabolism of *o*- and *p*-chlorophenoxyacetic acids by, 5397.
- Asymmetric reactants**, olefinic additions with. Part VI, 670.
- Aucubin** (glucoside of *Aucuba japonica*, Thunb.), 5194.
- Autoprotolysis of sulphuric acid**, heat of, 2962.
- Autoxidation of ethyl chaulmoograte**: course and stereochemistry of homolytic autoxidation, 4390.
- Azabenzocycloheptenones**. Part III, 3989.
- Aza-steroids**. Part II, 3641.
- Azepine**: Benz[*b*]azepine, 2,3,4,5-tetrahydro-5-oxo-1-toluene-*p*-sulphonyl-, prep. and oxidation, 3989.
- Azides**, solutions of, radiation chemistry. Parts I, II, 1479, 1487.
organic, reactions of. Part X, 1408.
- Azine**, *o*-nitroacetophenone, geometrical isomerism in, 5560.
- Azulenes**, condensation with aliphatic aldehydes in the presence of perchloric acid, 3579.
1-formyl-, condensation with heterocyclic quaternary ammonium salts to give dimethincyanine salts, 163.
1-1'Azulenylmethyleneazulenium salts and 1-ethoxymethyleneazulenium salts, prep., 1724.

B

- Bacillus subtilis**, ribitol teichoic acid from the walls of, prep. of 4-*O*-(β -D-glucopyranosyl)-D-ribitol (a degradation product), 2180.
- Baker's yeast**, polysaccharides of. Parts IV, V, 29, 3918.
- Basidiomycete B.841**, rate of polyacetylene synthesis by, 3544.
- Basic acid** (a triterpenoid), structure, 4308.
- Bentonite**, monomethylammonium, sorption of hydrocarbon mixtures by, 842.
- Benzacridines**, derived from 2,5-diethylaniline, prep., 384.
and other nitrogen-heterocyclic derivatives of *m*-ethylaniline, prep., 4836.
- Benzaldehyde**, pentafluoro-, prep., 808.
- Benzamide**, *N*-methyl-, infrared absorption of normal and ¹⁸O-labelled, 2666.
N,N-dimethyl-, normal and ¹⁸O-labelled, infrared absorption, 3063.
¹⁸O-labelled, infrared absorption, 1688.
- Benz[*b*]azepine**, 2,3,4,5-tetrahydro-5-oxo-1-toluene-*p*-sulphonyl-, prep. and oxidation, 3989.
- Benzene**, heat of mixing with carbon tetrachloride, 3425.
hydrogenation over nickel in a flow system, 302.
pyrolysis, 3400.
homologues, heterolytic and homolytic substitution by thiocyanogen chloride, 2428.
monosubstituted derivatives of, substitution patterns of, 3153.
allyl-, di- and tri-acetylation of, 3564.
p-bromo-(1,2-epoxyethyl)-, kinetics of reaction with benzylamine, 1708.
t-butyl-, free-radical halogenation of, 2587.
[*o*- and *p*-³H₁]-*t*-butyl-, relative reactivities in detritiation, 4927.
chloro-, *p*-methylphenylation of, 3108.
tetrachloro-1,4-bis(triethylstannoxy)-, crystal and molecular structure, 5027.
[α -¹⁴C]ethyl-, pyrolysis, 3407.
pentafluoronitro-, reaction with ammonia, 802.
hexafluoro-, prep., 2204.
nitro-, relative rate of phenylation of, redetermination, 565.
nitro-, *p*-methylphenylation of, 3108.
1,3,5-trinitro-, kinetics of complex-formation with diethylamine and other amines in solution at low temperatures, 2171.
- Benzenes**, halogeno-, rates of detritiation, 2388.
iodonitro-, reduction of, 4260.
nitro-, substituted, electric dipole moments of, 4522.
- Benzenesulphenyl chloride**, *o*-nitro-, sulphides formed with ketones, prep. and oxidation, 367.
- Benzenesulphonic acids**, *o*-alkyl-, action of aluminium chloride on, 4514.
- O*-Benzenesulphonyl-lactams**, reactions with phosphates, 1641.
- Benzidines**, substituted, and related compounds, as reagents in analytical chemistry. Part XVII, 5101.
3,3'-disubstituted, *NNN'*-tetracarboxymethyl derivatives, as reagents in analytical chemistry, 5101.
- Benzil**, conformation as solute in benzene or carbon tetrachloride, 4447.
- Benzimidazoles**, simple, infrared spectra, 2343.
- Benzimidazoline**, 2-oxo-, acyl derivatives of, 4827.

- Benzo[c]cinnoline**, bromination, and prep. and ultraviolet absorption spectra of reference compounds, 5029.
- Benzo[c][¹⁵N]cinnoline**, prep., 1404.
- Benzocyclobutene**, prep., 2971.
1,2-diphenyl-, attempted prep., 2965.
prep., 2971.
- Benzocyclobutenes**. Parts I, II, 2965, 2971.
- Benzocyclohepten-1-one**, perhydro-, system, synthetic and stereochemical studies, 5345.
- Benzo-1,4-dioxan**, derivatives of. Part V, 2148.
- Benzoic acid**, ionisation constant at 25°, 275.
o-2-carboxyethyl-, compounds derived from, 4687.
o-nitro-, acid rubidium salt, crystal structure, 1151.
p-nitro-, acid potassium salt, crystal structure, 1151.
¹⁸O-labelled, infrared absorption, 2382.
methyl ester, ¹⁸O-labelled, infrared absorption, 2382.
- Benzoic acids**, dissociation: influence of pressure on the Hammett reaction constant, 1093.
ionisation of, effect of chlorine as substituent in the aromatic nucleus, 4744.
ethyl esters, alkaline hydrolysis, effect of chlorine as substituent in the aromatic nucleus, 4744.
- Benzooin**, oxidation by cupric citrate, kinetics, 1579.
- Benzophenanthridones**, *N*-methyl, independent prep. and formation by internuclear cyclisation, 3873.
- Benzo[f]pyrrocoline**, 1-ethyl-1,2,3,5-tetrahydro-10-methyl-7,8-methylenedioxy-5-oxo-, prep., 4350.
- 2*H*-Benzof[*a*]quinolizines**, 3-alkyl-1,3,4,6,7,11*b*-hexahydro-9,10-dimethoxy-, 2-ketones and 2-alcohols derived from, new prep., 4711.
- Benzoquinones**, alkyl-, photodimers of, 4499.
- Benzothiazole**, quantitative study of nitration of, 2825.
- Benzothiazoline-2-thione**, 3-methyl-, crystal and molecular structure, 4379.
- Benzo-1,2,3-triazines**, substituted, reactions of, 4930.
- Benzo-trihalides**, arylation of, 554.
- Benzoyl chloride**, ¹⁸O-labelled, infrared absorption, 2382.
chlorides, reaction with aniline, effect of chlorine as substituent in the aromatic nucleus, 4744.
peroxide, esters formed in the reaction with aromatic solvents, 562.
- Benzoylacetate acid**, *o*-nitro-, methyl and ethyl esters, base-catalysed condensation products of, 5205.
- Benzyl chloride**, 4-nitro-, reaction with alkali, 217.
inhibition of the influence of the nitro-group upon α -proton-extraction from, 221.
derivatives, nitration, mechanism, 2938.
halides, kinetics of neutral hydrolysis, 1596.
- Benzylamines**, polychloro-, prep., 1414.
- Benzylidene acetal carbon atom**, configuration at, in 4,6-*O*-benzylidene-D-glucose and 1,3-*O*-benzylidene-L-arabinitol, 5005.
- Bergamottin**, prep., 2246.
- Beryllium**, dissolution in aqueous solutions of mineral acids and ammonium fluoride, 2658.
solvent-extraction of, from aqueous solutions of mineral acids, 174.
- Betaines**, phospho-, containing a basic group, use in Wittig reaction, 2130.
phospho-, prep. and properties, 1266.
- Betulin**, dehydrogenation with mercuric acetate, 3353.
- Betulonic acid**, dehydrogenation with mercuric acetate, 3353.
- Biacetyl**, conformation as solute in benzene or carbon tetrachloride, 4447.
two trimers of, structure, 4882.
- Biaryls**. Part III, 515.
oo'-diamino-, oxidation to cinnolines and *N*-oxides, 3695.
- Bicyclodec-1-enyl**, prep. and reactions, 1512.
- Bicyclo[2,2,2]octenone**, benzo-homologues, ultraviolet spectra, 1224.
- Bi(cyclo-oct-1-enyl)**, Diels-Alder reaction with *p*-benzoquinone, and steric interconversions of the primary adduct, 1505.
- Bicyclopentyl derivative**, novel, kinetics and mechanism of formation, 1946.
- Bicyclopentyl derivatives**, prep. from cyclopentadiene, 1939.
- Biformene** (diterpene hydrocarbon from *Dacrydium biforme*), 2187.
- 3,3'-Bi-indenyl**, prep. and reactions, 1498.
- Bile pigments**, chemistry of. Parts II-IV, 2264, 2268, 2276.
spectrophotometric titration of, 2276.
- Bilenes**, formation of porphyrins by cyclisation of, 2418.
- Bilirubin**, prototropy to a verdinoid pigment, 2268.
- Biliverdin**, prep. and spectral properties, 2264.
- Biologically essential substituents**, interaction with carbonyl groups. Parts II, III, 4047, 4051.
- Biosynthesis**, studies in relation to. Part XXIV, 3128.
of phenols. Part III, 2312.
- Biphenyl**, chlorination in acetic acid, products of, 2749.
rates of detritiation of, 1012.
nitration of, *ortho* : *para* ratios in, 3885.
derivatives of, cyclisation to phenanthridines, 3771.
2,4'-diphenyl- (*op'*-quaterphenyl), prep., 748.
2,2'-Di-*t*-butylbiphenylcarboxylic acids and 2'-*t*-butylbiphenyl-2-carboxylic acid, optical studies of, 611.
- Biphenylene**, π -complexes of, 2332.
substituted, formation by an Ullmann reaction, 4261.
2,3:6,7-Dibenzobiphenylene, simple preps. of, 515.
- Biphenylenes**. Part V, 3986.
di- and tetra-methoxy-, prep., 3986.
- 2,2'-Bipyridyl**, complex-forming agents similar to. Part I, 4790.
- 2,2'-Bipyridyls**, symmetrically substituted, prep., 1347.
- Bixins**, stereochemistry, from nuclear magnetic resonance, 1625.
- Bond energies** and heats of formation. Part V, 3793.
- Bonds**, carbon-carbon double, activation by cationic catalysts. Part X, 3532.
C-H, strength of, 3037.
- π -**Bonds**, between (*a*) silicon, phosphorus, sulphur, or chlorine and (*b*) oxygen or nitrogen, rôle of 3*d*-orbitals in, 5486.
- 10,9-Borazaroanthracenes**, prep., 425.
- Borazole**, hexamethyl-, π -molecular complex with tetra-cyanoethylene, 5060.
- Borazoles**, infrared spectra, 1931.
- Boron**, organic compounds of, chemical and spectroscopic evidence for the occurrence of π -character in C-B bonds in, 3103.
organic compounds of, thermochemistry. Part VI, 2472.
organic compounds of, cyclic. Part V, 1931.
organic derivatives of. Part II, 4045.
tropylium complex halide salts of, 2320.
di-isobutyl-*t*-butyl-, autoxidation of, relative reactivity of *t*-butyl and isobutyl group in, 341.
chlorides, reactions with acetone, 1103.
trichloride, interaction with trialkyl phosphates, 4095.
trichloride, interaction with dioxan and 1,3-dioxolan, 5545.
trichloride-phosphoryl chloride complex, structure, 4255.
trifluoride as catalyst for acetylation of anisole by acetic acid, kinetics, 1676.
halides, reactions with sulphoxides, 3224.
hydride derivatives. Part VII, 2196.
- Borane**, aminoditoyl-, and prep. of diarylborinic acids, 4909.
Boranes, aminodiaryl-, and their phosphorus and arsenic analogues, prep., 1000.
Boranes, phosphino-aryl-, 5053.
- Borate complexes** of diols and polyols, stereochemistry, 922.
- Borates**, trialkyl, as solutes, molar Kerr constants, apparent dipole moments, and conformations of, 4140.
- Boric esters** of 1,2- and 1,3-diols, structure and relative stabilities, 931.
- Borines**, trimeric dialkylphosphino-, and *B*-halogenated derivatives, prep. and infrared spectra, 1822.
- Borinic acids**, diaryl-, prep., 4909.
- Boronic acids**, phenyl-, interaction with hexosides, 2325.
- Boronic anhydride**, *o*-(4-phenylbuta-1,3-dienyl)phenyl-, prep., 3149.
- Decaborane**, pyrolysis, 5438.
- Decaborane derivatives** of type B₁₀H₁₂, 2M, characterisation of, 2196.
- Diborane**, heats of reaction with olefins, 2472.
- Diboron tetrachloride**, reaction with trichloroethylene, isobutene, and *cis*- and *trans*-but-2-ene, 356.

- Boron**, Diboron tetrachloride, reaction with ethylene oxide, 1893.
Diboron tetrachloride, reactions with some nitrogen-containing donor molecules, 3348.
Diboron tetrachloride-olefin compounds. Part III, 356.
Polyborate anions, stereochemistry, 922.
Silver fluoroborate, prep., 4689.
So-called "2-triacetylthiophen" (a boron compound), prep., 746.
Sodium borohydride, reduction of 1,2- and 1,3-diketones with, 910.
- Boron-carbon bonds**, π -character in, chemical and spectroscopic evidence for, 3103.
- Boroxoles**, infrared spectra, 1931.
- Botogenin**, prep. of 3β -hydroxypregna-5,9(11),16-trien-20-one from, 1859.
- "**Boyd's chloride**" (triphenylmethylphosphonic dichloride), structure, 3542.
- Bromination** of some anisoles and phenols, kinetics, 63.
of ethyl malonate and methyl methanetricarboxylate, kinetics, 726.
of the nitronaphthylamines and their *N*-acyl derivatives, 4866.
- Bromoforn**, alkaline hydrolysis and bromination of, kinetics, 1413.
- Buphanitine** (nerbowdine), racemisation during Oppenauer oxidations, 4038.
- Butadiene**, 2-phenyl-, prep. from α -methylstyrene, 370.
- Buta-1,3-diene**, reaction of methylene with, 4402.
- n-Butane**, rôle of surfaces in pyrolysis of, 4128.
- Butanes**, 2-halogeno-, halogenation of, 3520.
- Butane-1,3-diol**, 3-methyl-, some reactions of, 3251.
- But-1-ene**, 1,1,3,3-tetraphenyl-, reaction with antimony trichloride and hydrogen chloride in benzene, 3532.
- But-2-ene**, 2-methyl-, two pyrylium salts formed in diacetylation of, 3553.
- Butyl**. See also *s*-Butyl and *t*-Butyl.
- n-Butylamine**, mono-, di-, and tri-, equilibria with 2,4-dinitrophenol in aprotic solvents, 417.
- Butyric acid**, γ -(8-oxo-2-tetralyl)-, attempt to cyclise, 2520.
- Butyric acids**, *N*-substituted β -amino-, and their esters, stability, 5041.
- C**
- Cadmium**: Dichloro(ethylenediamine)cadmium, infrared spectrum and structure, 477.
- Calcium**, oxidation in moist oxygen, kinetics, 884.
hydrogen phosphate precipitated from solutions of calcium nitrate and phosphoric acid, stability, 4914.
oxide-phosphorus pentoxide system, high-temperature studies of, 4442.
- Callichilia* species, an alkaloid from, 2587.
- Calorimeter** for heats of mixing, new, 3425.
- Camphane**, (+)-10-bromo-2-chloro-2-nitroso-, crystal and molecular structure, 1976.
- Camphor**, oxidation by peracids, constitution and stereochemistry of the lactone $C_{10}H_{16}O_4$ formed in, 3366.
- Camphoric anhydride**, Friedel-Crafts reactions in anisole and in benzene, 68.
- Capsanthin**, structure, 4019.
- Capsorubin**, structure, 4019.
- Carbamic acid**, *NN*-diethylthio-, sodium salt, reaction of dialkyl phosphites and trialkyl phosphates with, 3164.
- Carbanilide**, 3,3'-diamidino-, and its congeners, prep., 5097.
- Carbene**, reactions with alkyl halides, 1495.
- Carbohydrate** components of antibiotics. Part I, 4831.
derivatives containing nitrogen. Part I, 4166.
osotriazole formation, scope and mechanism. Parts V, VI, 2957, 3146.
- Carbohydrates**, ionophoresis of. Part VII, 4649.
polarographic reduction, 3487.
radiation chemistry of. Parts VII, VIII, 3756, 3763.
reactions at position 1 of. Parts I, II, 3487, 5172.
of the red alga *Porphyra umbilicalis*, 1590.
- Carbon atom**, saturated, mechanism of electrophilic substitution at. Parts III-VI, 1121, 1133, 1142, 2359.
- Carbon-boron bonds**, π -character in, chemical and spectroscopic evidence for, 3103.
- Carbon tetrachloride**, heat of mixing with benzene, 3425.
tetrachloride, mechanism of reaction with aliphatic amines, 2261.
Carbonates, cyclic, physicochemical studies of. Part III, 100.
- Carbocation ions**, allylic, 1.
- Carbonyl compounds**, aromatic, condensation with ethyl 2- and 4-pyridylacetate, 5074.
groups, interaction with biologically essential substituents. Parts II, III, 4047, 4051.
- Carbonyl-methylene condensation reactions**, kinetics and mechanism. Part XI, stereochemistry of the products, 683. Part XII, elimination step of the uncatalysed condensation in water, 687.
- Carbonyls**, metal, and their derivatives, solvent shifts in infra-red spectra of, 2582.
hexa-, of metals of Group VI, reactions with di- and tri-tertiary phosphines, 4980.
- Carotenoids** and related compounds. Part IX, 4019.
- Casticin**, constituent of *Vitex agnus castus* seeds, 2523.
- Catalysis** with evaporated metal films in a flow system. Part I, 302.
by hydrogen halides in the gas phase. Part V, 1392.
- Catalysts**, activated metal, synthetic applications of. Part XII, 1347.
anionic, catalytic action of. Part I, 4653.
- Catalytic action** of metal alkyl-metal halide complexes. Part I, 1733.
- Catechol**, boron derivatives of, prep., 4045.
- Cathodic reduction**, prep. of mixed pinacols by. Part II, 2081.
prep. of unsymmetrical pinacols by, 757.
- Caulerpa* spp., green seaweeds, polysaccharides from. Part III, 3010.
- Caulerpa filiformis*, water-soluble polysaccharides of, 3010.
- Cells**: System methanol-water-hydrochloric acid at 25°, determination of Washburn numbers in, 5308.
Thermocells with iodine-iodide electrodes, initial thermo-electric power measurements at a mean temperature of 30°, 5390.
- Cellulose** and its derivatives, cross-linking of. Parts II-V, 2926, 2930, 4823, 5041.
acetates, secondary, triphenylmethyl derivatives of, fission by hydrogen bromide, 754.
- Cerium**: Ceric sulphate, oxidation of mandelic, DL-malic, and lactic acid by, kinetics and mechanism, 3097.
- Chalcone** type, heterocyclic compounds of, 2242.
- Chalcones**, dihydro-, of *Malus* species, 4133.
- Characeae**, polysaccharides of. Parts I, IV, 2914, 5333.
- Chaulmoogric acid**, ethyl ester, autoxidation: course and stereochemistry of homolytic autoxidation, 4390.
- Chelates**, metal. Parts I, II, 869, 1257.
- Chelating agents** related to cyclohexane-1,2-diamine-*NN'N'*-tetra-acetic acid, prep., 667.
- Chemical constitution** and physical properties. Part XXXII, 570.
- Chloramine**, kinetics of reaction with tertiary amines, 4172.
- Chlorination** of monosubstituted benzenes with *t*-butyl hypochlorite. *ortho* : *para*-ratio in, 3604.
of six monosubstituted benzenes by chlorinium ion, *ortho* : *para* ratio, 3610.
of biphenyl in acetic acid, products in, 2749.
of phenanthrene in acetic acid, kinetics and mechanism, 5285.
- Chlorine activation** by redox-transfer. Part I, 2261.
mechanism of replacement in *cis*- and *trans*-chloronitro-bis(ethylenediamine)cobalt(III) ions by thiocyanate in methanol, 2142.
trifluoride, gaseous reaction with methane, 5449.
Chlorides and perchlorates, dissociation constants in aqueous acetone, 1817.
[^{36}Cl]Chlorine, prep. from [^{36}Cl]hydrochloric acid, 639.
- 1-Chloroethyl methyl ether**, thermal decomposition of, 136.
- Chlorpheniramine**, resolution of, 2228.
- Cholesta-1,4-dien-3-one**, Mannich reaction with, 3059.
- 5 α -Cholesta-8,24-dien-3 α -yl** and **-3 β -yl toluene-*p*-sulphonates**, 4,4,14 α -trimethyl-, some reactions, 3295.

- 5 α - and A-Nor-5 α -cholestan-1-one** and derivatives of, prep., 1583.
- Cholestan-3-one**, 4,4-dimethyl-, derivatives of, prep., 2725.
- 5 α -Cholestan-4-one**, bromination of, observations, 3271.
- Cholestan-3 β -yl acetate**, 5 α ,6 β -dibromo-, hydroxylation by chromic acid, 3162.
- Cholestenone enol acetate**, 4-substituted steroids derived by rearrangement and reduction of, 2478.
- 5 α -Cholest-6-en-3-one**, methylation of: examples of boat conformation of ring-A in steroids, 767.
- Cholesterol**, C₂₈ hydrocarbon from, structure, 4230.
- Cholesteryl benzoylformate** (phenylglyoxylate), reduction of, 168.
- Choline chloride**, activity coefficients of aqueous solutions at 25°, 3100.
- Chromatography**, ascending paper, distribution of water and butan-1-ol on chromatograms, 3935.
- gas, speed of analysis by, 433.
- gas, columns, diffusional band spreading in. Part I, elution of unadsorbed gases, 360. Part II, the elution of adsorbed vapours, 2630.
- Chromium trioxide**, fluorination by selenium tetrafluoride, 3549.
- phosphates. Part II, 291.
- Chromate ions, monosubstituted, ultraviolet spectra, 3204.
- Chromium-phthalocyanine complexes** and perpendicular conjugation, 1257.
- Chromium(III)-arsenic acid system**, 39.
- Chromium(III)-phosphoric acid system**, phase diagram at 70° and ion-exchange studies in, 291.
- Tricarbonyltripropylchromium salts**, "normal" reaction with anions, 3475.
- Chromones and flavones**. Part III, 2663.
- cyano-, prep., 2663.
- Chrysene** and three methylchrysenes, convenient prep., 4079.
- Chrysenes**, 12-alkyl-6-amino-, prep., 4911.
- 12-benzyl-, prep., 4911.
- four dimethyl-, prep., 212.
- Cinnoline**, polycyclic derivatives of. Parts VI—IX, 1363, 1404, 3695, 5029.
- synthesis, new. Part I, 2828.
- Benzo[c]cinnoline, bromination, and prep. and ultraviolet absorption spectra of reference compounds, 5029.
- Benzo[c][¹⁵N]cinnoline, prep., 1404.
- Cinnolines and their N-oxides**, oxidation of *oo'*-diaminobiphenyls to, 3695.
- polycyclic, and their N-oxides, ultraviolet absorption, 1363.
- Cinnoline-3-carboxylic acids**, 4-hydroxy-, substituted, from mesoxalyl chloride phenylhydrazones, 2828.
- Citromycin**, degradation products of: revised structures, 792; prep. and reactions, 798.
- Clerodin**, constitution, 5061.
- Coal-tar bases**, studies of. Part IX, 5556.
- Cobalt**, cyclopentadienyl derivatives, substituted, 4619.
- chloride, spectra in non-aqueous solution, 5105.
- phosphates. Part II, 86.
- Bis(ethylenediamine)cobalt(III) salts, *cis*- and *trans*-dichloro- and *cis*- and *trans*-chlorohydroxo-, aquation of, 4637.
- Chlorocobaltate ion, spectra in non-aqueous solution, 5105.
- Chloronitrotris(ethylenediamine)cobalt(III) ions, *cis*- and *trans*-, mechanism of replacement of chlorine by thiocyanate in methanol, 2142.
- Cobalt(II), organometallic complexes of, 285.
- Cobalt(III) ammine phosphates, phase-diagram studies, 86.
- Cobalt(III), complexes with ethylenediaminetetra-acetic acid and (+)-propylenediaminetetra-acetic acid, stereospecific reaction with ethylenediamine or (\pm)-propylenediamine, 2249.
- Cobalt(III) ethylenediamine complexes, infrared spectra. Part II, 471.
- Diolefincobalt carbonyl complexes, prep., 602.
- Sulphatobis(ethylenediamine)cobalt(III) salts, chelated, prep. and properties, 1993.
- Sulphitobis(ethylenediamine)cobalt(III) complexes, prep., 3123.
- Co-catalysis**. Parts II, III, 1453, 3822.
- Codeine**, 14-hydroxynor-, and its derivatives, 4693.
- Colchicine**, disposition of the oxygen functions in, 1421.
- series, syntheses in. Parts III, IV, 1421, 1429.
- Complexes**, addition, of metals with aromatic systems, prep. and physical measurements in the solid state, 4958.
- aromatic, structural survey of, 494.
- binuclear, magnetic properties of, 396.
- chelate metal-ethylenediamine, infrared spectra and stabilities, 1112.
- of copper, determination of oxidation-reduction potentials, 2007.
- electron-donor and -acceptor, with aromatic systems. Parts VI—VIII, 2110, 4948, 4958.
- electron-donor and -acceptor, of some tetracyclic aromatic and hetero-aromatic molecules, 4948.
- halogeno-, relative stabilities. Part II, bond strengths, 1023.
- inorganic, spectra in non-aqueous solvents. Part I, 5105.
- metal, chelated, double bonding in, 3683.
- of metals with *o*-aminophenols, stability constants, 2244.
- of metals with bis-[3-di(carboxymethyl)aminopropyl] ether, computation of stability constants with aid of high-speed digital computer, 2019.
- molecular, exhibiting polarization bonding. Part III, 494.
- molecular, based on derivatives of 4,4'-dihydroxytriphenylmethane, 393.
- square-planar, metal-metal interactions in, 4452.
- tetrahedral, of nickel(II), and factors determining their formation. Part II, 2705.
- of transition metals with seven-membered ring systems. Parts III, IV, 594, 2037.
- d³-Complexes**, magnetic properties of some, 3138.
- d⁴-Complexes**, magnetic properties of some, 3132.
- Complex-formation** between a variety of organic solutes in carbon tetrachloride, 5434.
- of 1,3,5-trinitrobenzene with diethylamine and other amines in solution at low temperatures, kinetics, 2171.
- Complex-forming agents similar to 2,2'-bipyridyl**. Part I, 4790.
- C₁₅ compounds, reaction with acetic anhydride-sulphuric acid, 3539.
- Computer**, high-speed digital, use for computation of stability constants of metal complexes of bis-[3-di(carboxymethyl)aminopropyl] ether, 2019.
- Condensation reactions**, carbonyl-methylene, kinetics and mechanism. Part XI, stereochemistry of the products, 683. Part XII, elimination step of the uncatalysed condensation in water, 687.
- Condensations** involving linking of carbon to carbon, of carbon to nitrogen, and of carbon to sulphur, influence of pH on, 5211.
- Conductance** of solutions in which the solvent molecule is "large". Part VII, 311.
- measurements for determination of dissociation constants of chlorides and perchlorates in aqueous acetone, 1817.
- of ferric and cupric stearates in aliphatic hydrocarbons, 466.
- data on solutions of organic chlorides in antimony trichloride at 75°, 1711.
- of quaternary ammonium toluene-*p*-sulphonates in triaryl phosphites, 311.
- Conductimetric titration** of sodium in liquid ammonia with phosphine, arsine, stibine, and germanes, 2676.
- Conductivities** in liquid hydrogen chloride of derivatives of elements of Groups IV, V, and VI, 1238.
- electrical, in ethylene carbonate, 100.
- Conformation and reactivity**. Part III, 2543.
- Controlled-potential electrolysis**. Part VI, 4773.
- Co-ordination compounds** having carboxylic esters as ligands. Part I, stoichiometry, structure, and stereochemistry, 817.
- formed by tetrafluorides of the sulphur sub-group, 3417.
- Copper complexes**, oxidation-reduction potentials of, 2007.
- complexes of, spectrophotometric and thermodynamic properties, 4630.
- Copper(I), tetrakis(methyl cyanide)-, complexes, prep. and properties, 3215.
- Copper(II), complexes with phosphine oxides and arsine oxide analogues, prep., 2298.

- Copper**, Copper(II) formate, anhydrous, crystal structure, 3289.
 Cupric salts, oxidations of organic compounds by. Part II, 1579.
 Cupric stearate, conductance in aliphatic hydrocarbons, 466.
 Monopyridinecopper(II) acetate, crystal structure, 5244.
- Coronene**: 1,2:7,8-Dibenzocoronene, crystal structure, 1115.
 1,12:2,3:4,5:6,7:8,9:10,11-Hexabenzocoronene, crystal structure, 1280.
- Cortisone**, hydro-, 9 α -fluoro-16 β -methyl-, prep., 4560.
- Coumaran-3-ones** and other C₁₅ compounds, reaction with acetic anhydride-sulphuric acid, 3539.
 2-benzyl-2-hydroxy-, occurrence in Quebracho tannin extract, 3234.
- Coumarin**: Bicomarinyls, 3,3'- and 8,8'-, prep., 969.
 3-O-*p*-Coumaroylquinic acid, prep., 5153.
- Coumarins**, 8-phenyl-, prep., 969.
- Counter-ion fixation** in alginates, 5198.
- Crotonic acid**, β -ethoxy- α -ethoxycarbonyl-, ethyl ester, reaction with 1,2,4-triazoles, polyazaindenes derived from, 3046.
- Crotonyl esters**, addition of amines to, 2930.
- Cryoscopic determination of molecular weight** (submicro), 480.
- Cryptopimaric acid**, constitution, 752.
- Crystal Violet**, biphenyl analogues, steric effects in, 3445.
- Cyanamide**, disilyl-, prep. and properties, 4879.
- Cyanides**, alkali, reaction with pyrylium salts, 3566.
- Cyanogen chloride**, reaction with sodium salts of carboxylic acids, 3185.
- Cyclic compounds, reduced**. Parts X—XIII, 201, 206, 2903, 2908.
- Cyclisation**, internuclear. Parts XVI, XVII, 232, 3873.
- Cyclitols**. Parts IX—XI, 4116, 4122, 4718.
- Cyclobutane**, 1,2,3,4-tetraphenyl-, action of *N*-bromosuccinimide on, 479.
- Cyclobutanes**, hexafluoro-, some isomeric, prep., 3198.
- Cyclobutenes**, pentafluoro-, some isomeric, prep., 3198.
 Benzocyclobutenes. Parts I, II, 2965, 2971.
- Cyclodecene**: Bicyclodec-1-enyl, prep. and reactions, 1512.
- Cycloheptadiene**: 2,3:2',3'-Dibenzobi(cyclohepta-2,7-dienyl), prep. and reactions, 1498.
- Cycloheptatriene complexes** of Group VI metals, proton resonance spectra, 2037.
 (Cycloheptatriene- and tropylium-metal complexes. Parts I—III, 3475, 3479, 3484.
 rearrangement to benzene complexes, 3479.
NN'-Di(cyclohepta-2,4,6-trienyl)urea [*alias* tropylium isocyanate], prep., 482.
 Tropylium complex halide salts of boron, aluminium, iron, titanium, and tin, 2320.
- Cycloheptatrieneiron carbonyl** and related compounds, prep., 594.
- Cycloheptene**, acylation of, 1342.
- Cycloheptenone**:
 Azabenzocycloheptenones. Part III, 3989.
 Perhydrobenzocyclohepten-1-one system, synthetic and stereochemical studies, 5345.
- π -**Cyclohexadienylmanganese tricarbonyl** and related compounds, 3807.
- Cyclohexane series**, amino-acids of. Part I, 4372.
 1-methylene-4-*t*-butyl-, stereochemistry of reaction with *t*-butyl perbenzoate, 1650.
- Cyclohexanecarboxylates**, 4-*t*-butyl-, kinetics of acid-catalysed hydrolysis of, 2543.
- Cyclohexane-mono- and -di-carboxylates**, methyl, kinetics of acid-catalysed hydrolysis of, 2543.
- Cyclohexane-1,2-diamine-*NNN'***-tetra-acetic acid, chelating agents related to, prep., 667.
- Cyclohexane-*cis*- and -*trans*-1,2-diol**, ethylidene acetals of, prep., 3622.
- Cyclohexane-1,2-dione monophenylhydrazones**, attempts to prepare 1,2,3,4-tetrahydro-9,10-diazaphenanthrenes from, 4256.
- Cyclohexane-1,3-diones**. Parts V—VII, 1683, 3333, 3340.
- Cyclohexanol**, γ -irradiation of, 4086.
- Cyclohexene**, hydrogenation over nickel in a flow system, 302.
 γ -irradiation of, 4086.
- Cyclohexene**, 1-1'-acetoxystyryl-, Diels-Alder reactions, 2903.
 reaction with *p*-benzoquinones containing a methoxy-carbonyl group, 2908.
 3-vinyl-, pyrolysis, 3403.
- Cyclohex-2-enone**, 2-acetyl-, investigations on synthesis of. Part II, some related experiments, and constitution of the dimeric product (C₁₆H₂₀O₄), 3525.
- Cyclohex-2-en-1-one**, 3-methoxy-2, 4-diphenyl-, reaction with acetone cyanohydrin, 3340.
 3-methoxy-2,5-diphenyl-, reaction with acetone cyanohydrin, 1683.
- Cyclohexyl thiol sulphate**, sodium 2-oxo-, reactions of, 5552.
 and 1-methylcyclohexyl nitrite, alicyclic alkoxy radicals in the thermal decompositions of, 2620.
- Cyclohexylamine**, deamination by [¹⁸O]nitrous acid, 761.
- Cyclo-octene**, acylation of, 1342.
 Bi(cyclo-oct-1-enyl) Diels-Alder reaction with *p*-benzoquinone, 1505.
- Cyclopentadiene**, conversion into bicyclopentyl derivatives, 1939.
 simple derivatives of. Parts III, IV, 1037, 1042.
 deeply coloured electrically conducting polymers from, prep. and properties, 1953.
 reaction with trichloroacetic acid, rôle of carbonium ions in, 1946.
 π -Cyclopentadienyl- and cyclopentadiene-iron carbonyl complexes, 3172.
 Cyclopentadienylnickel-acetylene complexes, prep., 577.
 3-(Cyclopenta-2,4-dienyl)cyclopentyl trichloroacetate, mechanism of formation of a deeply coloured electrically conducting polymer from, 1964.
 Dicyclopentadienyl-tin and -lead, infrared spectra and structure, 547.
 Di- π -cyclopentadienyl hydrides of tantalum, molybdenum, and tungsten, prep., 4854.
- Cyclopentadienes**, fulvenes, and fulvalenes. Parts I—III, 4153, 4158, 4162.
- Cyclopentadienecarboxylic acid**, methyl ester, adducts with cyclopentadiene, 1037.
- Cyclopentadiene-1-carboxylic acid**, methyl ester, dimerisation, 1042.
- Cyclopentadienone**, 2,3,4-triphenyl-, and related products, 4162.
- Cyclopentadienyl derivatives**, substituted, of nickel, cobalt, iron, molybdenum, and titanium, 4619.
 Cyclopentadienyl-metal compounds, variation of bond type in, 690.
- Cyclopentanecarboxylic acid**, 2-oxo-, ethyl ester, reaction with arylamines. Part I, 4295.
- 1*H*-Cyclopenta[*c*]quinolines**, 2,3,4,5-tetrahydro-4-oxo-, prep., 4295.
- Cyclopentene**, from thermal unimolecular isomerisation of vinylcyclopropane, 3547.
- Cyclopropane**, thermal isomerisation of, 609.
 rate of isomerization of, temperature-dependence, 606.
 and lower alkanes, rates of oxidation of binary mixtures containing, 782.
 reaction of methoxy radicals with, 348.
 vinyl-, thermal unimolecular isomerisation to cyclopentene, 3547.
 "Cyclopropane platinum chloride", structure, 738.
- O²,3'-Cyclouridine**, prep., 1410.
- Cysteine**, interaction with a coloured maleimide, 2810.
 (\pm)-*S*-3-Methylbut-2-enylhomocysteine, prep., 4692.
 Syntheses of poly-(*S*-alkyl-DL-homocysteines), poly-DL-homocysteine, and poly-DL-homocysteic acid, 463.
- L-Cysteine**, L-cysteinyln-pentaglycyl-, oxidation of, 1749.
 L-cysteinyln-pentaglycyl-, prep. and oxidation, 1752.
 L-cysteinyln-hexaglycyl-, prep. and oxidation, 1752.
- Cytotoxic compounds**. Parts II, III, 2365, 2375.

- Dammar resin**, acidic constituents of, 646.
- Dealkylation**, mild, by sodium iodide in acetic acid, 3345.
- Deamination** (by nitrous acid) of amino-acids structurally related to glutamic acid, 3284.
 of glutamic acid, glutamine, and γ -aminovaleric acid, steric course of lactonisation following, 3278.

- Decalin**, interaction with Friedel-Crafts acetylating agents. Parts III, IV, 3828, 3835.
interaction with isobutyryl chloride-aluminium chloride, 4303.
interaction with propionyl chloride and aluminium chloride, 4306.
novel derivatives of, prep. from 10 β -(1,2-dihydroxyethyl)-*trans*-1 β -decalol, 3838.
- Decalin-2,9-diols**, the 10-methyl-, prep., 4478.
- trans*-1 β -Decalol**, 10 β -(1,2-dihydroxyethyl)-, prep. of novel decalin derivatives from, 3838.
- Dec-2-enoic acid**, *trans*-9-oxo-, prep., 3813.
- Defect structure**, effect on rate of formation of spinels, 2745.
- Dehydrogenation** of substituted 1,2-dihydronaphthalenes by quinones, correlation of donor reactivity with the nature of the substituents, 4794.
- Deoxyribonucleic acids**, nucleotide sequence in. Part V, 1903.
- Deposides** of gallic acid, 1836.
- Desosamine**, degradation by alkali: its absolute configuration at position 5, 4831.
- Detritiation** of halogenobenzenes, rates, 2388.
of diphenyl ether, diphenyl sulphide, dibenzofuran, and dibenzothiophen, rates, 5077.
of [*o*- and *p*-³H]-toluene and *t*-butylbenzene, relative reactivities, 4927.
aromatic, effect of methyl and *t*-butyl groups in, 247.
- Diaryls**. Part III, 515.
- 1*H*-1,7-Diazaindan-2-one**, 2,3-dihydro-3,3-dimethyl-, prep., 747.
- Diazindenes** and their quaternary salts. Part II, 584.
- Diazo-reaction**, Meerwein's, arylation of 2-furoic acid in, 2576.
- Diazo-exchange reaction** with nitrogen-15: *p*-nitrophenyl-diazonium chloride solution, 1825.
- Diazonium chloride**, *p*-nitrophenyl-, diazo-exchange reaction in solution of, 1825.
salts from *N*-alkyl-2-amino-2'- and -4'-methoxybenzanilides, abnormal reactions of, 232.
- 2,3,2',3'-Dibenzobi(cyclohepta-2,7-dienyl)**, prep. and reactions, 1498.
- 1,2,7,8-Dibenzocoronene**, crystal structure, 1115.
- Dibenzyl hyponitrite**, thermal decomposition in solution, kinetics, 1788.
- Dielectric polarization** of some imperfect gases, 5511.
- Diketones**, symmetrical 1,2- and 1,3-, reduction with sodium borohydride, and separation of diastereoisomeric 1,2- and 1,3-diols by borate complexes, 910.
- β -Diketones**, enol ethers of, structural requirements for the displacement of the alkoxyl by the cyano-group in, 3333.
- 1,5-Diketones**, structure, 674.
- Dimethincyanine salts**, prep. from 1-formylazulenes and heterocyclic quaternary salts, 163.
- Dimethylamino radical** (\cdot NMe₂), reactions, 1228.
- Dinaphtho(2',3'-2,3)(2'',3''-4,5)furan**, prep., 765.
- Diols**, and polyols, borate complexes of, 922.
diastereoisomeric, separation by means of borate complexes, 910.
1,2- and 1,3-, boric esters of, structure and relative stabilities, 931.
- Dioxan**, interaction with boron trichloride, 5545.
Benzo-1,4-dioxan, derivatives of. Part V, 2148.
- 1,3-Dioxans**, *trans*-5-hydroxy-2-phenyl-, stereochemistry, 2338.
- 1,3-Dioxans**, 5-hydroxy-2-*p*-nitrophenyl-, configuration, 2338.
- 1,3-Dioxolan**, interaction with boron trichloride, 5545.
- Dipolar molecules**, reactions with ions, effect of solvent composition on kinetics of. Part III, 226.
- Dipole moments**, studies on polyethylene and polypropylene glycols of low molecular weight, 4729.
electric, of substituted pyridines, pyridine 1-oxides, and nitrobenzenes, 4522.
- Dissociation** of benzoic acids and phenylacetic acids: influence of pressure on the Hammett reaction constant, 1093.
constant, acid, of hydrogen sulphide at high pressure, 4678.
constants of some chlorides and perchlorates in aqueous acetone from conductance measurements, 1817.
constants, first acid, of "sulphurous" and phosphoric acids, effect of pressure on, 1765.
- Diterpene hydrocarbon** (biformene) from *Dacrydium biforme*, 2187.
- Diterpenes**, potential intermediates for synthesis of, 960.
- Diterpenoid bitter principles**. Part III, 5061.
- Diterpenoids**, *n*-nor-, studies in prep., 1105.
- Dithizone**, reactions with organometallic compounds, 1470.
studies with. Parts VII-IX, 1272, 1470, 2118.
and its analogues, action of halogens on, 1272.
- Dithizones**, mono- and di-*p*-bromo-substituted-, and their metal complexes, absorption spectra, 2118.
- Docosa-4,7,10,13,16-pentaenoic acid**, prep., 2779.
- Double bonds**, isolated, ultraviolet absorption of, 2075.
- Dyes**, studies in light absorption of. Part III, 1209.

E

- Echinulin**, structure of, some remarks on, 3128.
- Ehrlich-Sachs reaction**, molecular structure of products from, 1631.
- Elaidic acid**, rôle of peroxides in autoxidation of, 4324.
- Electrolysis**, controlled-potential. Parts VI, VII, 4773, 5325.
glow-discharge. Parts IV, V, 5177, 5186.
- Electrolytes**, absorption by ion-exchange materials, 4784.
- Electron-transfer reactions** between oxygen and aromatic hydrocarbons, 905.
- Eliminations**, gas-phase. Part II, 2756.
- Ellagic acid**, naturally occurring trimethyl ether of, 642.
- Emetamine**, structure, 3899.
(\pm)-Emetamine, stereospecific prep., 3899.
- Emetine** and related compounds, prep. Part III, 4939.
- Enol ethers** of β -diketones, displacement of the alkoxyl by the cyano-group in, structural requirements for, 3333.
- Epilimonol iodoacetate**, X-ray analysis of, 4183.
- Epilumisterol**, oxidation and reduction, 4676.
- Epoxide reactions**, mechanism. Part III, 1708.
- Epoxides**, polymerization of. Part III, 4298.
- Epoxide-episulphide transformation**, in sugars, 1537.
- Ergosterol**, oxidation of, proof of rear approach in, 1880.
- Ericaceae**, Hong Kong, new triterpene from, 551.
- Erythritol**, di-*O*-benzylidene-, structure, 5011.
- Ester hydrolysis**, tracer studies in. Part IX, 943.
- Esters**, α - and β -amino-, optically active, effect of ketones on, 4047.
carboxylic, as ligands in co-ordination compounds. Part I, 817.
 β -(diarylphosphino)propionic, abnormal hydrolysis. Part I, 5454.
hemialdal, infrared spectra, 2525.
- Ethane**, 1,1-dinitro-, polarographic behaviour and controlled-potential electrolysis, 5325.
- Ethanol**, irradiation in the liquid and in the solid state and in the presence of solutes, 3962.
- Ether-fission**, acid-catalysed. Part I, a new mechanism in sulphuric acid, 4963.
- Ether**, bis-[3-di(carboxymethyl)aminopropyl], metal complexes of. Computation of stability constants with aid of high-speed digital computer, 2019.
1-chloroethyl methyl, thermal decomposition of, 136.
methyl phenethyl, nitration of, 3030.
- Ethers**, association with *ortho*-substituted phenols, 4762.
and related compounds, oxidaton of. Part I, 5239.
aromatic, interdependence of molecular conformation and conjugation in. Part IV, 2516.
- Ethoxide**, methoxide, and hydroxide ions, comparison of the nucleophilic reactivity in dioxan, 5259.
- Ethoxyl radicals**, 1-phenyl-, in thermal decomposition of 1-phenylethyl nitrite, 4006.
- Ethyl radicals**, reaction with hydrogen bromide, 3037.
1-phenyl-, cation (in polymerization of styrene), 729.
- Ethylene**, strength of C-H bond in, 2580.
tetracyano-, π -molecular complex with hexamethylborazole, 5060.
cis-1,2-difluoro-, nuclear magnetic resonance spectrum, 743.
1,1-diphenyl-, dimerisation in benzene-*n*-butyl-lithium-titanium tetrachloride-hydrogen chloride systems, 1733.
1,1-diphenyl-, interaction with butyl-lithium, 4653.

- Ethylene**, carbonate, electrical conductivities in, 100.
dichloride and dibromide, solid transitions in mixed crystals of, 3021.
sulphate, tetramethyl-, prep., 2257.
- Ethylenes**, asymmetric diaryl-, reactions with. Parts VI, VII, 2684, 2687.
2-bromo-1,1-di-*p*-alkoxyphenyl-, reduction by thiophenols, 2684.
chlorinated, action of γ -radiation on, 4485.
1,1-di-*p*-alkoxyphenyl-, addition of thiols to, 2684.
- Ethylenediamine**, complexes with cobalt(III), infrared spectra. Part II, 471.
chelate complexes with metals, infrared spectra and stabilities, 1112.
- Ethylenediamines**, *NN*-dialkyl-*N'*-arylalkyl-*N'*-4-quinazolyl (or 6-methyl-4-pyrimidyl or 4-methyl-2-pyrimidyl)-, of potential pharmacological interest, prep., 1908.
Chelated sulphatobis(ethylenediamine)cobalt(III) salts, prep. and properties, 1993.
cis- and *trans*-Chloronitrobis(ethylenediamine)cobalt(III) ions, mechanism of replacement of chlorine by thiocyanate in methanol, 2142.
cis- and *trans*-Dichloro- and *cis*- and *trans*-chlorohydroxobis(ethylenediamine)cobalt(III) salts, aquation of, 4637.
(Ethylenediamine)-zinc-, cadmium, and -mercury, dichloro-, infrared spectra, 477.
Sulphitobis(ethylenediamine)cobalt(III) complexes, prep., 3123.
- Ethylenediaminetetra-acetic acid** and (+)-propylenediaminetetra-acetic acid, cobalt(III) complexes with, stereospecific reaction with ethylenediamine or (\pm)-propylenediamine, 2249.
- Eucalyptus calophylla** Kino, leucopelargonidin from, 2787.
Eugenia maire A. Cunn., constituents of. Parts I, II, 642, 4684.
- Evolidine** (cyclic heptapeptide), structure, 279.
- Extraction** of beryllium from aqueous solutions of mineral acids by alkyl esters of phosphoric acid, 174.
of nitric acid from aqueous solution by organic solvents, 90.
- F**
- Fagara xanthoxyloides* gum, aldobiuonic acid from, 3166.
- Ferrocene**, derivatives of. Parts VIII—XI, 4600, 4604, 4610, 4615.
derivatives of, prep. from fulvenes, 4610.
disubstituted derivatives of, 4604.
hydroxymethyl- and hydroxyethyl-, β -glucopyranosides of, prep., 4464.
Ferrocenium thiocyanate, formation in mixed aqueous solvents, 473.
- Ferrocenes**, substituted, prep., 1827.
azo-, 4615.
tetrahydropyrido-, 4600.
- Festuclavine**, an alkaloid, isolation from *Aspergillus fumigatus* Fres., 2085.
- Fischer indole synthesis** with isopropyl methyl ketone 3-pyridylhydrazone, 584.
- Flavan derivatives**. Part IV, 499.
- Flavans**, polymerisation of. Parts IV, V, 3677, 4663.
- Flavan-3,4-diols**, 2,3-*trans*-, stereochemistry, 4663.
- Flavan-4-ols**, condensation with phenols, 3677.
- Flavone**, 7-fluoro-, and related compounds, prep., 3155.
- Flavones** and chromones. Part III, 2663.
cyano-, prep., 2663.
6-halogeno-, and related compounds, prep., 3414.
- Flordean starch**, physical properties, 1534.
- Fluorene**, compounds of, substituent effects in. Part III, 3052.
derivatives of. Part XII, 1400.
series, kinetic studies of. Part I, 2561.
2-amino-9-bromo-, hydrobromide, and related compounds, prep., 1400.
9-diazo-, acid-catalysed solvolysis of, 2561.
(+)-2-Carboxy-9-phenyl-9-phosphafluorene 9-oxide, loss of optical activity in reduction of, 2133.
Di-(9-phenyl-9-fluorenyl) peroxide, thermal decomposition, 3879.
- Fluorene**, Fluoren-10-ylicetic acid, 1,2,3,10-tetrahydro-2,8-dimethyl-3-oxo-, synthetic route to, 3958.
9-Fluorenylamine, derivatives of, prep., reactivity, and pharmacology, 1291.
- Fluorenes**, 9-chloro-9-phenyl-, hydrolysis of, 3052.
2-substituted 9-diazo-, prep., 1412.
- Fluorination** of the trioxides of chromium, molybdenum, tungsten, and uranium by selenium tetrafluoride, 3549.
- Fluorine**, organic compounds of. Parts XX—XXIII, XXV, XXVI, 3448, 3452, 3457, 3537, 4033, 4669.
Chlorine trifluoride, gaseous reaction with methane, 5449.
Diethyl fluoro-oxaloacetate, further reaction with aldehydes, 4033.
Epifluorohydrin, reactions of, 3448.
Ethyl fluoroacetate, methylene reactivity in, 3537.
Ethyl $\gamma\gamma\gamma$ -trifluoroacetate and 5,5,5-trifluoro-4-oxopentanoic acid, cyanohydrins of, 4519.
Fluorides, complex, prep. by use of sulphur tetrafluoride as fluorinating agent, 2496.
Fluorides and oxyfluorides of molybdenum, tungsten, rhenium, and osmium, vapour pressures, 1568.
Fluorocarbon radicals, reactions. Part XVI, 3015.
Fluorocarbons, complexes with transition metals. Part I, 2738.
Halogen polyfluorides, mixtures with halogens as effective sources of the halogen monofluorides in reactions with fluoro-olefins, 3779.
Hexafluorides of heavy transition-metals, vapour pressures of, 1563.
Hexafluorocyclobutanes and pentafluorocyclobutenes, some isomeric, prep., 3198.
Keto compounds, α -fluorinated, prep. and reactions, 3452.
Mevalonic acid, fluorine analogues, prep., 3457.
Pentafluorobenzaldehyde and related pentafluorophenyl ketones and carboxylic acids, prep., 808.
Pentafluoronitrobenzene, reaction with ammonia, 802.
Pentafluorosulphur compounds, high-resolution nuclear magnetic resonance spectra, 4736.
Perfluoroalkyl derivatives of nitrogen. Part IX, 1351.
Perfluoro-olefins, complexes with transition metals, 2738.
Perfluoro-*o*- and -*p*-xylene, prep., 1574.
Phosphonitrilic fluoride, tetrameric, crystal structure, 4777.
Polyfluoroalkylmercuric fluorides, 3825.
Polyfluoroarenes. Parts III, IV, 2204, 3719.
Polyfluoro-compounds, aromatic. Parts VII—IX, 802, 808, 1574.
Polyfluoro-compounds, heterocyclic. Part I, 1740.
Silver fluoroborate and silver hexafluorophosphate, prep., 4689.
Sodium hexafluoromolybdate(v), structure, 4253.
Sulphur chloride pentafluoride, reactions, 5554.
Sulphur chloride pentafluoride, reaction with unsaturated hydrocarbons, 2066.
reaction with fluoro-olefins, 2070.
Tetrafluorides of the sulphur sub-group, co-ordination compounds formed by, 3417.
Trifluoroacetic acid, studies of. Part XVII, 1771.
Trifluoroiodomethane, mechanism of addition to ethylene, 4973.
Trifluoromethylthiosilver, prep. and properties, 2597.
Trifluoronitrosomethane, reaction with unsymmetrical olefins, 1351.
Triphosphonitrilic 1,1-difluoride 3,3,5,5-tetrachloride, nuclear magnetic resonance spectra, 1382.
- Formals**, mixed, derived from alcohols and phenols, 2578.
- Formates**, alkyl chloro-, mechanism of hydrolysis, 3748.
- Formic acid**, thermodynamic properties, 2241.
- Friedel-Crafts** co-catalysts, relative efficiencies of halogenated acetic acids as, 1453.
reactions of camphoric anhydride in anisole and in benzene, 68.
reactions, aliphatic. Parts III, IV, 1342, 1345.
- Fries rearrangement** of half-esters from fusion of phenol and *p*-cresol with phenylsuccinic anhydride, 1083.
of *p*-tolyl acetate catalysed by zirconium tetrachloride and stannic chloride, 3842.
- D-Fructose**, di-*O*-isopropylidene-1-*O*-toluene-*p*-sulphonyl-, action of hydrazine on, 4823.

Fulvalene, X-ray determination of the crystal and molecular structure, 4936.
 a hexaphenyl-, prep., 4153.
Fulvalenes, fulvenes, and cyclopentadienes. Parts I—III, 4153, 4158, 4162.
 1,1'-dihydro-2,3,5,2',3',5'-hexa- and 1,1'-dihydro-2,3,4,5,2',3',4',5'-octa-phenyl-, prep., 4158.
Fulvenes, fulvalenes, and cyclopentadienes. Parts I—III, 4153, 4158, 4162.
 prep. of ferrocene derivatives from, 4610.
Fulvic acid, structure, 798.
 prep. and reactions of degradation products, 798.
Fungal detoxication. Part V, 5397.
Fungi, chemistry of. Parts XXXVIII, XXXIX 3820, 4579.
 higher, chemistry of. Part XII (Oxford school), 1532.
 higher, constituents of. Parts I, II (R. L. Edwards *et al.*), 4995, 5003.
Furan: Dinaphtho(2',3'-2,3)(2'',3''-4,5)furan, prep., 765.
Furan-2,3-dicarboxylic acids, 4,5-diaryl-, prep. from β -aroyl-propionic acids, 707.
Furfuryl alcohol, reaction with 2,4-dinitrophenylhydrazine in methanolic hydrochloric acid, 4690.
Furil, conformation as solute in benzene, 4447.
2-Furoic acid, arylation in Meerwein's diazo-reaction, 2576.
Fustic, young (*Rhus cotinus*), colouring matter of the wood, 3538.

G

Gafrinin, sesquiterpenoid lactone from *Geigeria africana*, isolation and structure, 2049.
D-Galactofuranoside, α -D-glucopyranosyl, biosynthesis, 1088.
D-Galactose, saccharides containing, biosynthesis by *Beta-coccus arabinosaceus*, 1088.
 α - and β -anomers, crystallographic examination, 3157.
 amino-derivatives, prep., 2926.
 di-*O*-isopropylidene-6-*O*-toluene-*p*-sulphonyl-, action of hydrazine on, 4823.
Gallic acid, esters and depsides of, 1836.
 biosynthesis, 1854.
Gallotannins. Part I, introduction, 1829. Parts II—IV, 1836, 1842, 1854.
Gamma-radiation, effects of. Part V, 4086.
Gedunin, some reactions, 3705.
Geigeria africana, sesquiterpenoid lactone (gafrinin) from, isolation and structure, 2049.
Geijerene, independent confirmation of structure by physical methods, 2286.
Geodoxin and related compounds, oxidative coupling leading to, 2312.
Geraniolenes, prep., 539.
Germanium. Germanes, conductimetric titration with sodium in liquid ammonia, 2676.
 Germanes, aryltriethyl-, cleavage by aqueous-methanolic perchloric acid, 297.
 Protodetriethylgermylation, effects of strongly deactivating substituents in, 5082.
Gibberelic acid. Part XVIII, some rearrangements of ring A, 2498.
Gibberellin A₁, 3545.
 (\pm)-**Gibberone**, alternative synthetic approach to, 3958.
Glass electrode, precise measurements of ionisation constants of benzoic, phenylacetic, and β -phenylpropionic acids, 275.
 α -1,4-**Glucans**, branched, characterization of structure-type of, 1534.
D-Glucitol and its borate complex, partial periodate oxidation of, 1546.
D-Glucofuranose, 1,2-*O*-isopropylidene-, five-, six-, and seven-membered cyclic phosphates of, prep., 448.
Glucopyranosides, carbonium ions formed in acid-catalysed solvolysis of, structure, 3240.
 β -**Glucopyranosides** of hydroxymethyl- and hydroxyethylferrocene, prep., 4464.
 β -**D-Glucopyranoside**, phenyl 2-amino-2-deoxy-, and some 2-acylamino-derivatives thereof, prep., 879.
t-butyl, acid-catalysed hydrolysis of, 412.
 α -**D-Glucopyranosyl D-galactofuranoside**, biosynthesis by *B. arabinosaceus*, 1088.

α -1,4-**Glucosans**. Parts XI, XII, 1183, 2681.
Glucose, and some of its acetyl derivatives, alkaline degradation, 531.
 Guanosine diphosphate glucose, prep., 2574.
D-Glucose, two new cyclic phosphates of, prep., 448.
 amino-derivatives, prep., 2926.
 2-amino-2-deoxy-, hydrochloride of, reaction with aqueous ammonia, 2468.
 4,6-*O*-benzylidene-, configuration at the benzylidene acetal carbon atom, 5005.
 2-deoxy-2-sulphoamino-, and heparin and related substances, properties, 1204.
Glucoside (aucubin) of *Aucuba japonica*, Thuub., 5194.
Glucosides, aryl, variation of optical rotation with temperature, 5172.
 α -**D-Glucoside**, methyl 4,6-*O*-benzylidene-3-deoxy-3-phenyl-azo-, prep., 4166.
 α -**D-Glucosides**, substituted phenyl, acid and alkaline hydrolysis, 4291.
Glucosylan, enzymic prep. of a, 3995.
Glutamic-aspartic transaminase, apoenzyme of, isolation from pig heart muscle, 1698.
Glutamic acid, reaction with nitrous acid, 3593.
 steric course of lactonisation following deamination, 3278.
 residues, fission of peptides containing one, 524.
Glutamine, reaction with nitrous acid, 3593.
 steric course of lactonisation following deamination, 3278.
Glutinane, epoxy-, from *Rhododendron westlandii*, 551.
Glycerol: Bisglycerol tricarbonate, infrared spectrum, 581.
Glycines, *N*-aroyl-, reaction with perfluoro-carboxylic anhydrides, 1771.
Glycogen-iodine complexes, absorption spectra, 1183.
Glycogens, end-group assay by oxidation with sodium meta-periodate, 2681.
Glycols, polyethylene and polypropylene, of low molecular weight, dipole-moment studies, 4729.
Glycollic acid, tungstate and molybdate complexes with, 4732.
Glycosides, acid-catalysed hydrolysis of, 412.
 methyl, as transfer agents in polymerisation of acrylonitrile and styrene, 3308.
Glycosylamines, isomeric *N*-aryl-, prep., 323.
Graveoline (alkaloid), prep., 4360.
Grignard reagent from *p*-bromodimethylaniline, prep., 465.
Gris-2'-en-4'-ones, 3-alkylidene-, ozonolysis products of, structure and stereochemistry, 327.
Griseofulvin, total synthesis, 4067.
Guanidine, heterocyclic derivatives of. Part II, derived products, 2098. Parts III, IV, 4332, 4672.
Guanidines, *N*-(thiobenzamido)-, and related compounds, prep. and cyclisation, 1617.
Guanosine, alkylation of, 3923.
Guanosine diphosphate glucose, prep., 2574.
Guanylic acid, alkylation of, 3923.
Gum exudate of *Albizzia zygia* (Macbride), structural studies, 3908.
 from *Anogeissus schimperi*, constitution, 3461.
 from *Fagara xanthoxyloides*, aldobiuronic acid from, 3166.
 from *Virgilia oroboides*. Part II, isolation of oligo-saccharides after partial hydrolysis, 4892.

H

Halides of the transition elements of the first long period, physical properties, 3323.
 of the transition metals, complex. Part II, 3512.
 Tropylium complex halide salts of boron, aluminium, iron, titanium, and tin, 2320.
Halogen compounds, organic, radiation chemistry of. Part I, 4485.
 substitution, aromatic, kinetics and mechanisms. Parts X, XI, 2749, 5285.
Halogens, mixtures with halogen polyfluorides as effective sources of the halogen monofluorides in reactions with fluoro-olefins, 3779.
 Halogeno-complexes, relative stabilities. Part II, bond-strengths, 1023.
Halogenation of the 2-halogenobutanes, 3520.
 free-radical, of *t*-butylbenzene, 2587.

- Hammett reaction constant**, influence of pressure on, 1093.
relation, test of: ionisation constants of some substituted anilines and phenols, 388.
 σ -constants for ethyl phenylacetate and derivatives, 3247.
- Hardwoods**, extractives from. Parts XXXI, XXXII, 702, 2714.
- Heat of autoprotolysis of sulphuric acid**, 2962.
of ionization of some substituted anilines, 2572.
- Heats of formation and bond energies**. Part V, 3793.
of formation of the halides of the transition elements of the first long period, 3323.
of formation of the trimeric and tetrameric phosphonitrilic chlorides, 430.
of mixing, new calorimeter for, 3425.
of sublimation of straight-chain monocarboxylic acids, 1048.
- Hecogenin**, steroids derived from. Part II, some ring c-seco-derivatives, 3504.
- Helenin**, some reduction products of, 4721.
- Heliotropium indicum** L., major alkaloid of (indicine), 5400.
- Hemicelluloses** of roselle fibre (*Hibiscus sabdariffa*), 5262.
- Heparin**, 2-deoxy-2-sulphoamino-D-glucose, and related substances, properties, 1204.
- Heptitol**, D-glycero-D-gluco-, cyclic acetals of, structure, 3633.
- Heteroaromatic compounds**, new. Part IX, 425.
polycyclic, infrared spectra. Part II, 3983.
- Heterocyclic analogues of conjugated cyclic hydrocarbons**. Parts IV—VI, 163, 1724, 3579.
compounds, addition reactions of. Part VIII, 457.
of chalcone type, 2242.
polyfluoro-. Part I, 1740.
related to isatin 3-thiosemicarbazone, 243.
from urea derivatives. Part II, 5137.
molecules, polarographic reduction of. Part III, 5297.
phenols, thermochromism of, 182.
- 1,12:2,3:4,5:6,7:8,9:10,11-Hexabenzocoronene**, crystal structure, 1280.
- Hex-2-enal**, an insect repellent from black cocktail ants, 488.
- Hexosides**, interaction of phenylboronic acids with, 2325.
- Hexosylamines**, N-aryl, paper-chromatographic investigation of transglycosylation with arylamines, 320.
- Hispidin**, prep., 5003.
a new 4-hydroxy-6-styryl-2-pyrone from *Polyporus hispidus* (Bull.) Fr., 4995.
- Histidine**, DL- α -methyl-, dihydrochloride, prep., 5037.
- Hong Kong Ericaceae**, new triterpene from, 551.
- Hopane**, hydroxy-, final clarification of stereochemistry, 3891.
- Hormones**, steroid, compounds related to. Parts II—VII, 2532, 4531, 4535, 4547, 4560, 4573.
modified steroid. Parts XXI—XXIV, 2091, 2821, 4108, 4111.
- Hudson's lactone rule**, application to hydroxypipercolic acids: an anomaly, 4268.
- Hydantoins**, 3-alkyl-1-arylsulphonyl-, prep., 4660.
2-thio-, 3-alkyl-1-arylsulphonyl-, prep., 4660.
- Hydramine fission**, mechanism, 4576.
- Hydratropic acids** and the related 2-phenylpropanols, prep., 171.
- Hydrazine**, formation by glow-discharge electrolysis in liquid ammonia, 5177.
2,4-dinitrophenyl-, reaction with furfuryl alcohol in methanolic hydrochloric acid, 4690.
hydrate and palladium-charcoal, prep. of 1,2-dihydro-1,4-dihydroxy-2-oxoquinolines by reductive cyclisation with, 5058.
 $\alpha\alpha$ -Diphenyl- β -picrylhydrazyl, reactions with phenols, 2160.
Toluene-p-sulphonhydrazide, some unusual reactions, 4970.
- Hydrazinium(1+)** as a ligand, 4177.
- Hydrazoic acid**, direct amination of mesitylene by, in concentrated sulphuric acid, 4685.
- Hyrido-complexes** of iron(II), 5507.
of ruthenium(II) and osmium(II), 2605.
- Hydrocarbons**, reactions with hydroxyl radicals in aqueous solution, 4281.
slow oxidation in the gas phase. Part I, 4014.
- Hydrocarbons, aromatic**, action of sulphur monochloride on, 4510.
electron-transfer reactions between oxygen and, 905.
formation at high temperatures. Parts XII—XIV, 3400, 3403, 3407.
mechanism of adsorption of, by chromatographic alumina, 58.
steric effects on spectra of, 2063.
polycyclic, synthesis. Part IV, 4079.
polynitro-, complex formation in pyridine solutions of, 4886.
- arylalkyl**, homolytic substitution by thiocyanogen in, 2447.
- branched-chain**, synthesis and reactions of. Part XIV, 2587.
- conjugated cyclic**, and their heterocyclic analogues. Parts IV—VI, 163, 1724, 3579.
- polycyclic**, ozonolysis. Parts II—IV, 1232, 3858, 3864.
- polynuclear**, crystal-structure studies. Parts V, VI, 1115, 1280.
- Hydrogen bond formation**, studies in. Part X, 5434.
bonding of imidazole in carbon tetrachloride solution, 2165.
in aqueous solutions of maleic acid, 2790.
in solutions of 4-methyl-2,6-di-t-butylphenol, steric inhibition of 2557.
of pyrazole, in carbon tetrachloride solution, 140.
of substituted pyrazoles in carbon tetrachloride solution, 4201.
in thiosemicarbazones and thioamides, 957.
intramolecular, in methyl 4,6-O-benzylidene-D-aldohexosides, 3617.
- chloride**, liquid, as an ionizing solvent. Part III, 1238.
- sulphide**, intracrystalline oxidation, 4741.
first acid dissociation constant at high pressure, 4678.
- transfer**. Part XIX, 4794.
- Hydrogenation**, catalytic, rôle of supports in. Parts I, II, 4137, 5086.
of benzene and cyclohexene over nickel in a flow system, 302.
- Hydrolysis** of acetic anhydride. Parts VI, VII, 2305, 4362.
of acid chlorides, mechanism. Part VII, 3748.
of alkyl acetates and corresponding lactones, kinetics, 47.
of esters, tracer studies in. Part IX, 943.
of phenyl and diphenylmethyl trifluoroacetate, tracer studies in, 943.
of triphenyl and trimethyl phosphates, kinetics, 2670.
acid-catalysed, of the methyl cyclohexane-mono- and -dicarboxylates and 4-t-butylcyclohexanecarboxylates, kinetics, 2543.
acid and alkaline, of some substituted phenyl α -D-glucosides, rates, 4290.
neutral, of some allyl and benzyl halides, kinetics, 1596.
- Hydroxyl radicals**, reactions with hydrocarbons in aqueous solution, 4281.
- Hydroxylamines**, NN-di-(1-cyanoalkyl)-. Part I, prep., 4063.
- Hydroxylaminetrisulphonate** and hydroxylamine-NO-disulphonate ions, hydrolysis in perchloric acid, 3625.
- Hyoscyne**, absolute configuration, 3222.
- Hyoscyamine**, absolute configuration, 3222.

- Imidazole**, hydrogen bonding in carbon tetrachloride solution, 2165.
some ligands containing, 4790.
Simple benzimidazoles, infrared spectra, 2343.
- Imidazoles**, purines, and pyrimidines. Parts, XV, XVI, 3254, 4845.
1-amino-, prep., 4845.
1-amino-, and derivatives. Part I, 3816.
- Imidazole-4-carboxamide**, 5-amino-2-methyl-, 1-amino-derivatives of, prep., 3816.
- Imidazoline**: 2-Oxobenzimidazoline, acyl derivatives of, 4827.
- 2-Imidazolines**, 2-amino-, prep., 5120.
- Imides**: Carbodi-imides, disproportionation of, 5051.
- Indane-1,3-dione**, 2-acetyl-4,5,7-trimethoxy-, prep., 792.

Indanone: 2,3-Dihydro-3,3-dimethyl-1*H*-1,7-diazaindan-2-one, prep., 747.

Indene: 3,3'-Bi-indenyl, prep. and reactions, 1498.

Indenes, diaza-, and their quaternary salts. Part II, 584. polyaza-, structure. Part VIII, 3046.

tetra-aza-, from reaction of ethyl β -ethoxy- α -ethoxycarbonylcrotonate with 3-amino-1,2,4-triazoles, 3046.

Indeno(2',3':1,2)phenanthrene, 4'-isobutyl-6'-methyl-, prep., 4320.

new prep., 3361.

Indeno(2',1'-2,3)thiophen, 3'-oxo-, Schmidt reaction with: structure of the product, 1408.

Indicine: major alkaloid of *Heliotropium indicum* L., 5400.

Indigo: Iron bisindigo, a compound reported to exhibit oxygen-carrying properties, 4025.

Indole, 3-acetyl-, prep., 4267.

4- and 6-hydroxy-2,3-diphenyl-, 3516.

Indolylmagnesium iodides, reaction with nitroethylene, 744.

Skatole, 5-hydroxy-, prep., 746.

Indoles. Part V (G. F. Smith *et al.*), 940. Part VI (K. Schofield *et al.*), 5558.

3-alkyl-, dimers of, 940.

Dioxindoles prep. and conversion into *o*-aminoaryl ketones, 5558.

Indole-4,7- and -6,7-quinone, 2,3-diphenyl-, 3516.

Insect repellent from black cocktail ants, 488.

Interaction, molecular: molecular polarisation of amines in benzene and carbon tetrachloride, 2974.

Intermediates, unstable. Parts XI—XIII, 1, 7, 12.

Iodine, cations of, in solution, 12.

complexes of, in inert solvents. Part IX, 1200.

complexes with amylopectin and glycogen, absorption spectra, 1183.

dissolved in inert solvents, reaction with solid sodium hydroxide, 1200.

radioactive, kinetics of exchange between sodium iodide and *n*-butyl iodide, 226.

Iodides, Group V quaternary, iodomercurate complexes with. Part I, aqueous decompositions and absorption spectra, 3929.

Protodeiodination of *p*-iodoaniline, mechanism, 822.

Sodium iodide in acetic acid as a mild dealkylating agent, 3345.

Ion association, thermodynamics of. Parts VII—IX, 2215, 4367, 4458.

Ion-exchange materials, absorption of electrolytes by, 4784.

Ions, condensed, in aqueous solutions. Part II, 3211.

solvation of. Part II, 1328. Part III, S_N2 reactivity of some Group VI anions, pyridine, and alkyl halides in dipolar aprotic solvents, 4398.

Ionisation constants of benzoic, phenylacetic, and β -phenylpropionic acids at 25°, 275.

of substituted anilines and phenols: test of the Hammett relation, 388.

Ionising radiation, chemical action on simple aliphatic alcohols. Parts I, II, 3962, 3970.

Ionizing solvent, liquid hydrogen chloride as. Part III, 1238.

β -Ionone, an oxidation product of, constitution, 308.

Ionophoresis of carbohydrates. Part VII, 4649.

Ipecacuanha alkaloids. Part VII, 3899.

indole analogues of, stereospecific prep., 3899.

Iron, complexes of, spectrophotometric and thermodynamic properties, 4630.

tetrahedral complexes of, prep., 3512.

cyclopentadienyl derivatives, substituted, 4619.

tropylium complex halide salts of, 2320.

Cycloheptatrieneiron carbonyl and related compounds, 594.

π -Cyclopentadienyl- and cyclopentadiene-iron carbonyl complexes, 3172.

Ferric stearate, conductance in aliphatic hydrocarbons, 466.

Iron bisindigo, a compound reported to exhibit oxygen-carrying properties, 4025.

Iron(II), hydrido-complexes of, 5507.

Iron(II), organometallic complexes of, 285.

Isatin 3-thiosemicarbazone, heterocyclic compounds related to, 243.

Isatogens. Part I, 5205.

Isalloxazines related to riboflavin, prep., 476.

Isobutane, oxidation of, reactions during the induction period, 4014.

reaction of methoxyl radicals with, 348.

nitroso-, crystal structure of *trans*-dimer, 3686.

Isobutyryl chloride-aluminium chloride, interaction with decalin, 4303.

Isoclovene, structure: X-ray analysis of the hydrochloride and hydrobromide, 4382.

Isocyanuric acid, tris-(2-hydroxyethyl) ester, prep., 3148.

Isodrin-aldrin series, cyclisations and rearrangements in, 4809.

Isodunniole, new prep., 3548.

Isolichenin, structure, 623.

Isopropenyl and isopropylidene groups: the terpene problem, 2353.

Isopropyl alcohol, gaseous oxidation of. Part I, influence of temperature, pressure, and mixture composition on the formation of hydrogen peroxide and other products, 1884. Part II, influence of the surface on the formation of hydrogen peroxide and other products, 3041.

Isopropylidene and isopropenyl groups: the terpene problem, 2353.

Isouinolone, derivatives of, reaction with acrylonitrile, 4939.

derivatives, novel prep., starting with diacylation of olefins, 3561.

Isoquinolines, 8-phenyl-, prep., 3882.

Isorotenolols, structure and stereochemistry, 2861.

Isorotenolones, structure and stereochemistry, 2861.

Isoursenol, ursane analogue of taraxerol, prep., 2638.

K

Kerr constant, molar, of solutes, chloroform as solvent for determination of, 1671.

Keto-compounds, α -fluorinated, prep. and reactions, 3452.

Ketones, absorption spectra. Part VI, 1224.

reactions with lead tetra-acetate, catalysis with boron trifluoride, 4472.

reactions with oxidising agents. Part I, 4472.

ten aliphatic, as solutes in carbon tetrachloride, dipole moments, polarisations, and molar Kerr constants, 4148.

o-aminoaryl, conversion of dioxindoles into, 5558.

diaryl, reduction to diarylmethanes, 1405.

divinyl-, prep., 1345.

Macrocyclic bis-(1,3-diketones), prep., 5015.

Ketoximes, quaternary, spectroscopic studies, 2162.

Kindler reaction, prep. of thio-oxamides and thioamides by extensions of, 1194.

Kinetics of acetylation of anisole by acetic acid in presence of boron trifluoride, 1676.

of addition of trifluoroiodomethane to ethylene, 4973.

of bromination of anisoles and phenols, 63.

of bromination of ethyl malonate and methyl methanetri-carboxylate, 726.

of condensation of ethyl cyanoacetate with guanidino-2*H*-pyrroles, 4332.

of detritiation of biphenyl and naphthalene, 1012.

of exchange of radioactive iodine between sodium iodide and *n*-butyl iodide, 226.

in studies of the fluorene series. Part I, 2561.

of hydrolysis of acetic anhydride in deuterium oxide solution, 2305.

of hydrolysis of alkyl acetates and corresponding lactones, 49.

of hydrolysis of *t*-butyl chloride, 1517.

of hydrolysis of hydroxylaminetrisulphonate and hydroxyl-amine-*NO*-disulphonate ions in perchloric acid, 3625.

of hydrolysis of triphenyl and trimethyl phosphates, 2670.

of hydrolysis of phenyl and diphenylmethyl trifluoroacetate, 943.

of acid-catalysed hydrolysis of the methyl cyclohexane-mono- and -di-carboxylates and 4-*t*-butylcyclohexane-carboxylates, 2543.

of alkaline hydrolysis and bromination of bromoform, 1413.

- Kinetics** of neutral hydrolysis of allyl and benzyl halides, 1596.
of isotopic exchange reactions between radioactive lithium chloride and benzyl and diphenylmethyl chloride, 4342.
and mechanism of substitution at the central carbon atom of tri-*p*-nitrophenylmethyl chloride in glacial and aqueous acetic acid, 5479.
and mechanisms of aromatic halogen substitution. Parts X, XI, 2749, 5285.
and mechanism of formation of a novel bicyclopentyl derivative, 1946.
and mechanism of oxidation of mandelic, DL-malic, and lactic acid by ceric sulphate, 3097.
of oxidation of benzoin with cupric citrate, 1579.
of oxidation of calcium in moist oxygen, 884.
of the reaction of alkyl and aryl compounds of the nickel group with pyridine, 2207.
of reactions of *p*-bromo-(1,2-epoxyethyl)benzene and *p*-(1,2-epoxyethyl)toluene with benzylamine, 1708.
of reaction of dichloromethylene with water and with phenoxide ions, 1663.
of reactions between ions and dipolar molecules, effect of solvent composition on. Part III, 226.
of reaction between methyl fluoride and lithium iodide in acetone solution, 1523.
of thermal decomposition of dibenzyl hyponitrite in solution, 1788.
- L**
- Lactic acid**, oxidation by ceric sulphate, kinetics and mechanism, 3097.
Lactones, enol, of β -aroyl- α -arylmethylenepropionic acids, synthesis and mechanism of isomerisation of, 1658.
Lactone-acids, homologous cyclic, prep., 1514.
Lactonisation, steric course following deamination of glutamic acid, glutamine, and γ -aminovaleric acid, 3278.
Lanosta-5,8-dien-7-one, $\beta\beta$ -acetoxy-, photoisomerisation of, 1215.
Lanthanum dicarbide and sesquicarbide, magnetic properties, 1775.
Lanthionine, polymeric polypeptides of, prep., 459.
Lead, dicyclopentadienyl-, 547.
mesityl and phenyl derivatives of, 4405.
tetra-acetate, reactions with ketones, catalysis by boron trifluoride, 4472.
tetra-acetate, reaction with α -pinene, 2232.
Plumbanes, aryltricyclohexyl-, cleavage by aqueous-ethanolic perchloric acid, 3715.
Plumbanes, trialkyl-. Part I, 1679.
Trimethylplumbane-borane-ammonia system, properties of, 1679.
Lecithin, adsorption of water vapour by, 5385.
Leucoanthocyanidin, new (teracacidin), from *Acacia intertexta*, 499.
Leucoanthocyanidins of plants. Part III, 2787.
Leucopelargonidin from *Eucalyptus calophylla* Kino, 2787.
Ligands containing imidazole, 4790.
Ligand field strengths of the halide, methyl, phenyl, and hydride anions, 772.
Light absorption of dyes, studies in. Part III, 1209.
Lignans. Part I, acylation in phosphoric acid as a route to intermediates, 4506.
Limonic, structure: X-ray analysis of epilimonol iodoacetate, 4183.
and related bitter principles, constitutions, 255.
Linoleic acid, prep., 2779, 4409, 5270.
Linoleic acids, substituted, prep., 3854.
 γ -Linoleic acid, prep., 2779.
 γ -Linolenic acid, prep., 5270.
Liquid-phase reactions at high pressures. Part XIII, 146.
Liriodendritol (an inositol ether), constitution, 4718.
Lithium, reaction products with mesityl oxide, 2255.
butyl-, interaction with 1,1-diphenylethylene, 4653.
n-butyl, heat of formation and bond energies, 3793.
amalgam, reactions with dihalogenonaphthalenes, 515.
iodide, reaction with methyl fluoride in acetone solution, kinetics, 1523.
- Loganin**. Part II, structural interpretation of the spectral properties, 1407.
Lucerne (*Medicago sativa*), pectic substances from. Part I, 4215.
Lupane series, dehydrogenation with mercuric acetate in. Parts I, II, 3353, 5224.
Lupane-3 β ,20-diol, prep., 2330.
Lupeol, and its derivatives, dehydrogenation with mercuric acetate, 5224.
and its esters, bromination, 5353.
Lycorine, a degradation product (1-ethyl-1,2,3,5-tetrahydro-10-methyl-7,8-methylenedioxy-5-oxobenzof[*f*]pyrrocoline) of, prep., 4350.
Lysolecithin, adsorption of water vapour by, 5385.
micelles, hydration, 5385.
- M**
- Macrocycles**, conjugated. Part XXII, 866.
Maesopsis eminii, constituent of (2-acetyl-1,8-dihydroxy-3-methylnaphthalene), 702.
Magnesium: Organomagnesium halides, unsolvated, prep., 1175.
Magnetic perturbation of singlet-triplet transitions. Part V, mechanism, 1987. Part VI, 2566.
properties of binuclear complexes, 396.
of some d^4 complexes, 3132; d^3 complexes, 3138.
(and chemical properties) of lanthanum dicarbide, 1775.
of the phosphonitric halides, 1376.
susceptibility measurements by the Gouy method, triethyl-enediaminenickel(II) as a calibrant for, 3147.
Mairin, a triterpene from *Eugenia maire* A. Cunn., 642.
identity with betulinic acid, 4684.
Malaccol, structure and stereochemistry, 5445.
Malachite Green, biphenyl analogues, steric effects in, 3445.
derivatives containing substituents in the phenyl ring, electronic absorption spectra of, 1285.
derivatives containing *ortho*-substituents in the dimethyl-aminophenyl groups, electronic absorption spectra, 1529.
Maleic acid, hydrogen bonding in aqueous solutions of, 2790.
Malimide, a coloured, prep. and interaction with cysteine, 2810.
Malic acid, tungstate and molybdate complexes with, 3691.
DL-Malic acid, oxidation by ceric sulphate, kinetics and mechanism, 3097.
Malonates of transition metals, ion association in aqueous solution, 4367.
Malonic acid, ethyl ester, kinetics of bromination, 726.
Malononitrile, condensation products with carbonyl compounds, 4705.
Malus species, dihydrochalcones of, 4133.
Mandelic acid, tungstate and molybdate complexes with, 4732.
oxidation by ceric sulphate, kinetics and mechanism, 3097.
Mandelic acids, use in resolution of α -hydroxyamidinium chlorides, 3181.
Manganese: π -Cyclohexadienylmanganese tricarbonyl and related compounds, 3807.
Manganese(II), tetrahedral complexes of, containing triphenylphosphine oxide and triphenylarsine oxide as ligands, 3735.
Manganese(II) chloride complexes. Part I, stability constants, 5148.
Nitratopentacarbonylmanganese(I), prep., 4839.
Mannan, from baker's yeast, 29, 3918.
Mannich reaction with cholesta-1,4-dien-3-one, 3059.
 α -D-Mannopyranoside, methyl, carbonate derivatives, prep., 3178.
D-Mannose, carbonate derivatives, prep., 3178.
Maytenone. Part I, isolation and structural studies, 4420.
a degradation product of (podocarpane-6,7-diol), prep., 4430.
Melanin, formation from adrenochrome, 52.
Membranes, ion-selective, effect of pressure on transport of non-electrolytes through, 4483.
Menschutkin reactions, acceleration by pressure, structural effects in, 146.

- (-)-**Menthyl benzoylformate** (phenylglyoxylate), reduction, 168.
- Mercury exchange**, one-alkyl, pattern of steric effects among alkyl groups and mechanisms in, 2359.
- exchange reaction, one-alkyl, uncatalysed, kinetics, stereochemistry, and mechanism, 1133.
- exchange reactions, one-alkyl, anion-catalysed, kinetics, stereochemistry, and mechanism, 1142.
- exchange reaction, three-alkyl, kinetics, stereochemistry, and mechanism, 1121.
- bis(trifluoromethylthio)-, and derived compounds, Raman spectra, 3187.
- dichloro(ethylenediamine)-, infrared spectrum and structure, 477.
- divinyl-, pyrolysis, 2580.
- Iodomercurate complexes with Group V quaternary iodides. Part I, aqueous decompositions and absorption spectra, 3929. Part II, reactions with triphenylphosphine, 5127.
- Mercuric acetate, dehydrogenation with, in the lupane series. Part I, 3353.
- Mercuric fluorides, polyfluoroalkyl-, prep., 3825.
- Mesityl oxide**, reaction products with lithium, 2255.
- Mesitylene**, direct amination by hydrazoic acid in concentrated sulphuric acid, 4685.
- Mesomeric effect**, in derivatives of *NN*-dimethylaniline, steric repression of, 81.
- moments of amino-, methylamino-, and dimethylamino-groups, 81.
- Mesoxalyl chloride phenylhydrazones**, cyclisation to substituted 4-hydroxycinnoline-3-carboxylic acids, 2828.
- Metal alkyl-metal halide complexes**, catalytic action of. Part I, 1733.
- Metal chelates**. Parts I, II, 869, 1257.
- nitrate and nitrites, molten, surface tensions, 468.
- Metals**, cyclopentadienyl compounds with, variation of bond type in, 690.
- of Group VI, cycloheptatriene complexes of, proton resonance spectra, 2037.
- of Group VI, hexacarbonyls of, reactions with di- and tri-tertiary phosphines, 4980.
- alkali**, tributyl- and triphenyl-stannyll derivatives of, reactions, 618.
- transition**, heats and entropies of reaction with triethylene-tetramine, 5115.
- alkyls and aryls of. Part IV, 285.
- complexes with a tetra-tertiary arsine, 4269.
- complexes with fluorocarbons. Part I, 2738.
- complex halides of. Part II, 3512.
- complexes with nitric oxide. Part VI, 775.
- complexes with seven-membered ring systems. Parts III, IV, 594, 2037.
- ions, heats and entropies of reaction with diethylenetriamine, 2994.
- oxyanions of, structure and reactivity. Part XI, 3204.
- perchlorates of, infrared spectra, 3091.
- heavy, vapour pressures of hexafluorides of, 1563.
- Methane**, trifluoroiodo-, mechanism of addition to ethylene, 4973.
- trifluoronitroso-, reaction with some unsymmetrical olefins, 1351.
- 4,4'-dihydroxytriphenyl-, molecular complexes based on derivatives of, 393.
- nitro-, second virial coefficients, 2247.
- dinitro-, polarographic behaviour and controlled-potential electrolysis, 5325.
- triphenyl-, dyes, nucleophilic replacements in, 2642.
- Methanes**, diaryl-, prep. by reduction of diaryl ketones and diarylmethanols, 1405.
- di- and tri-aryl-, steric effects in. Parts III—VII, 1285, 1395, 1529, 2642, 3445.
- Methanetricarboxylic acid**, methyl ester, kinetics of bromination, 726.
- Methanol**, irradiation in the absence and in the presence of oxygen in the solid and in the liquid state, 3970.
- Methanols**, diaryl-, reduction to diarylmethanes, 1405.
- Methoxide**, ethoxide, and hydroxyl ions, comparison of the nucleophilic reactivity in dioxan, 5259.
- Methoxyl radicals**, reactions with cyclopropane and isobutane, 348.
- Methyl cation**, triphenyl-, competition for, between aniline and phenol, 575.
- chloride**, tri-*p*-nitrophenyl-, kinetics and mechanism of substitution at the central carbon atom, in glacial and aqueous acetic acid, 5479.
- fluoride**, reaction with lithium iodide in acetone solution, kinetics, 1523.
- fluoride**, reaction with lithium iodide in acetone solution, kinetics, 1523.
- group**, effect of, in aromatic detritiation, 247.
- nitrite**, pyrolysis, 3082.
- radicals**, reaction with hydrogen bromide, 3037.
- Methylamine**, *NN*-di-2-chloroethyl-, reaction with thiosulphate, 679.
- thionaphthenyl-, derivatives of, prep., reactivity, and pharmacology, 1291.
- Methylation** of alkyl 3-alkyl-2,4,6-trihydroxyphenyl ketones, 1021.
- of 5 α -cholest-6-en-3-one, boat conformation of ring-A in steroids, 767.
- Methylene**, reaction with buta-1,3-diene, 4402.
- dichloro-, reaction with water and with phenoxide ions, kinetics, 1663.
- Mevalonic acid**, fluorine analogues of, prep., 3457.
- Michler's Hydrol Blue**, α -alkyl derivatives of, electronic absorption spectra, 1395.
- Micrococccin P**, chemistry of. Parts V, VI, 3381, 3394.
- Mixed crystals** of ethylene dichloride and ethylene dibromide, solid transitions in, 3021.
- Molecular weight**, cryoscopic determination of, submicro-, 480.
- Molybdenum**, cyclopentadienyl derivatives, substituted, 4619.
- di- π -cyclopentadienyl hydrides of, prep., 4854.
- oxytetrafluoride and pentafluoride, vapour pressures, 1568.
- trioxide, fluorination by selenium tetrafluoride, 3549.
- Molybdate complexes with acyclic polyhydroxy-compounds, 35.
- Molybdate complexes with glycollic and mandelic acid, 4732.
- Molybdate complexes with tartaric, malic, and succinic acid, 3691.
- Molybdenum(II) complexes containing triphenyl-phosphine oxide or -arsine oxide, 750.
- Molybdenum(III) thiocyanates, complex, structure, 4590.
- Molybdenum(V) chloride, reaction with aliphatic amines, 24.
- Sodium hexafluoromolybdate(V), structure, 4253.
- Monascin**, structure, 4579.
- Monosaccharides** and their derivatives, sulphates of. Part II, periodate oxidation, 1692. Part III, acid hydrolysis, 2935.
- Montmorillonite**, tetramethylammonium, sorption of hydrocarbon mixtures by, 850.
- Montmorillonites**, alkylammonium, sorption of mixtures and selectivity in. Parts, I, II, 842, 850.
- Musizin** (2-acetyl-1,8-dihydroxy-3-methylnaphthalene), extraction from *Maesopsis eminii*, 702.
- Myoinositol**, cyclohexylidene derivatives of, prep., 4116.
- phosphates, prep., 4122.

N

- Naphthalene**, detritiation, rates, 1012.
- phenylation, determination of total and partial rate factors, 3112.
- reaction with some aroyl peroxides, 3116.
- 1-1'-acetoxyvinyl-3,4-dihydro-, prep. and reactions with dienophils, 201.
- 2-acetyl-1,8-dihydroxy-3-methyl- (musizin), constituent of *Maesopsis eminii*, 702.
- 2,7-dihydroxy-, derivatives of, prep., 4258.
- 2-methoxy-, isobutyl and *t*-butyl derivatives of, 1409.
- Naphthalenes**, substituted, luminescence of, 3893.
- alkyl-, heterolytic and homolytic thiocyanation of, 2436.
- dihalogeno-, reactions with lithium amalgam, 515.
- 1,2-dihydro-, substituted, dehydrogenation by quinones, 4794.

- Naphthalenes**, ten dinitro-, quantitative study of further nitration of, 4314.
 polynitro-. Part III, 4314.
- 1,2-Naphthoquinones**, prep. from derivatives of 2,7-dihydroxynaphthalene, 5293.
- 1,4-Naphthoquinone**, 2,3,5,7-tetrahydroxy-, prep., 1008.
- 2-Naphthoic acid**, 3-nitro-, prep., 2253.
- Naphthols**, arylazo-, infrared spectra and structure, 2151.
- Naphthylamines**, *N*-acyl-nitro-, nitration of, 4859.
 nitro-, and their *N*-acyl derivatives, bromination, 4866.
- 1-Naphthylamines**, 4-arylo-, dipole moments and absorption spectra, 5163.
- Neosaman**, structure, 3641.
- Nerbowdine** (buphanitine), racemisation during Oppenauer oxidations, 4038.
- Nickel group**, alkyl and aryl compounds of, kinetics of reaction with pyridine, 2207.
 tritertiary arsine complexes of, 4433.
 cyclopentadienyl derivatives, substituted, 4619.
 Bis(triphenylphosphine)nickel dinitrosyl, prep., 2259.
 Cyclopentadienylnickel-acetylene complexes, prep., 577.
- Nickel(II)**, complexes with triarylphosphines, 4816.
- Nickel(II)**, complexes with nitric oxide, prep., 775.
- Nickel(II)**, tetrahedral complexes of, and factors determining their formation. Parts II, III, 2705, 4816.
 Disalicylaldehydenickel, structure, 2594.
- Nicotine**, volatile products of pyrolysis of, 2455.
- Nicotinic acid 1-oxide**, reaction with acetic anhydride, 5216.
- Nitella translucens**, non-esterified pectic acid from, 5333.
- Nitramides and nitramines**. Part XII, 1797.
- Nitramine**, *N*-methyl-*N*-*p*-nitrophenyl-, thermal rearrangement, 2616.
- Nitramines and nitramides**. Part XII, 1797.
ON-dialkyl-, base catalysed decomposition, and evidence for existence of geometrical isomers, 1797.
- Nitration of benzyl derivatives**, mechanism, 2938.
 of benzylic compounds by mixed acid and acetyl nitrate, *ortho*:*para* ratios in, 3888.
 of biphenyl, *ortho*:*para* ratios in, 3885.
 of methyl phenethyl ether, *ortho*:*para* ratio in, 3030.
 further, of the ten dinitronaphthalenes, quantitative study, 4314.
- Nitriles**, reactions of. Part I, 1066.
- Nitro-group**, influence of, on side-chain reactivity. Parts I, II, 217, 221.
 upon α -proton-extraction from 4-nitrobenzyl chloride, inhibition of, 221.
- Nitrogen**, carcinogenic compounds of. Part XXIX—XXXI, 384, 2258, 4836. (Part XXVIII, *J.*, 1960, 4500.)
 perfluoroalkyl derivatives of. Part IX, 1351.
 phosphorus compounds of. Part I, 872.
 sulphur compounds with. Part II, 3625.
 dioxide, liquid mixtures with nitric oxide, composition of vapour in equilibrium with, 2106.
 NMe_3 and ONMe_3 , anisotropies of the molecules, 2612.
 Dibenzyl hyponitrite, kinetics of thermal decomposition in solution, 1788.
 Dinitrogen trioxide. Part IV, 2107.
- Nitrates**, metal, molten, surface tension of, 468.
 alkylammonium, reaction in dinitrogen tetroxide with uranium, 2987.
- Nitric oxide**, liquid mixtures with nitrogen dioxide, composition of vapour in equilibrium with, 2106.
 transition-metal complexes with. Part VI, 775.
- Nitric acid**, extraction from aqueous solution by organic solvents: dimerisation of nitric acid in the organic solvent, 90.
- Nitrites**, alkyl, abstraction of nitric oxide from, by methyl radicals in the gas phase, 5302.
 metal, molten, surface tension of, 468.
 Cyclohexyl and 1-methylcyclohexyl nitrite, alicyclic alkoxy radicals in thermal decompositions of, 2620.
 Ethyl nitrite, 1-phenyl-, 1-phenylethoxyl radicals in thermal decomposition of, 4006.
 Methyl nitrite, pyrolysis, 3082.
- Nitrous acid**, reaction with glutamine and glutamic acid, 3593.
 complex formed with tributyl phosphate, 1705.
 vapour, formation and thermodynamic properties, 1017.
- Nitrogen**, [^{18}O]Nitrous acid, deamination of cyclohexylamine by, 761.
 Nitrosyl chloride, microwave spectrum, structure, and nuclear quadrupole coupling coefficients of, 1322.
 Radical-ion, $\text{NO}_2^{\cdot-}$, 7.
- Nitrosamines**, ^{14}C -labelled dialkyl-, prep., 4226.
- Nitroso-compounds**, aromatic: molecular structure of some products from the Ehrlich-Sachs reaction, 1631.
- Non-electrolytes**, activity coefficients in aqueous solutions of sugars, 4906.
- Nucleic acids**, constituents of, infrared spectroscopic investigation, 504.
- Nucleophilic reactivity of ethoxide, methoxide, and hydroxide ions in dioxan**, a comparison, 5259.
- Nucleoside phosphites**, prep., 2316.
- Nucleotides**, peptidyl-, prep., 2053.
- Nucleotides**. Part XLVI, 2316.

O

- Octadec-12-enoic acid**, (\pm)-*cis*-9-hydroxy-, prep., 4945.
- $\Delta^1(^9)$ -**Octal-2-one**, tautomerism of, 4089.
- Octa-1,3,5,7-tetraene**, prep., and singlet-triplet absorption spectrum, 2566.
- Oestra-1,3,5(10)-triene-2,3,16 α ,17 β -tetraol**, prep., 4769.
- Oestra-1,3,5(10)-trien-17-one**, 2,3-dihydroxy-, prep., 4769.
- Oestrogens**, 2-hydroxy-. Part II, 4769.
- Olefins**, reaction with acylium perchlorates, 3573.
 complexes with rhodium, observations on, 1418.
 compounds with diboron tetrachloride. Part III, 356.
 conformationally fixed. Part III, 1650.
 cyclic, diacylation of, and novel prep. of isoquinoline derivatives, 3561.
 fluoro-, reaction with sulphur chloride pentafluoride, 2070.
 perfluoro-, transition/metal complexes with, 2738.
 pyrylium salts obtained by diacylation of. Parts II—IV, 3553, 3561, 3564.
 and sulphides, co-oxidation of, 5339.
- cis*-Olefinic acids**, pure, attempts to prepare, 351.
- Olefinic**, additions, with asymmetric reactants. Part VI, 670.
- Oleic esters**, rôle of peroxides in autoxidation of, 4324.
- Optical rotatory dispersion**. Part II, 545.
- Optical studies of 2,2'-di-*t*-butylbiphenylcarboxylic acids and of 2'-*t*-butylbiphenyl-2-carboxylic acid**, 611.
- 3d-Orbitals**, rôle in π -bonds between (a) silicon, phosphorus, sulphur, or chlorine and (b) oxygen or nitrogen, 5486.
- Organic reactions in aqueous solution at room temperature**. Part II, 5211.
- Organometallic compounds**, reactions with dithizone, 1470.
 of Group II. Part III, 1175.
- Osage orange**, triterpene constituents of the fruits of. Part II, 2330.
- Osmium pentafluoride**, vapour pressure, 1568.
 Osmium(II), complexes of tertiary phosphines with, prep., 896.
 Osmium(II), hydrido-complexes, prep., 2605.
- Osootriazoles** from carbohydrates, scope and mechanism of formation. Parts V, VI, 2957, 3146.
 chloro- and iodo-phenyl-, prep., 2957.
- Oxalates** of transition metals, ion association in, 2215.
- Oxalic acid**, oxidation with quinquevalent vanadium, 4757.
- Oxaloacetic acid**. Part I, nature in the solid state and in neutral aqueous solution, 5043.
- Oxamides**, infrared spectra, 1919.
 thio-, infrared spectra, 1919.
 thio-, prep. by extensions of the Kindler reaction, 1194.
- 1,3-Oxazines**, derivatives of, infrared spectra and structure, 489.
- Oxazoles**, 4-substituted, reactions of, 405.
- Oxazolidine-2,5-diones**, 3-substituted, polymerization of, 2057.
- 2-Oxazolines**, 2-amino-, prep., 5120.
- Oxidation-reduction potentials of copper complexes**, 2007.
- Oxidations**, competitive. Parts II, III, 782, 4285.
 at low temperatures induced by light, competitive, 4285.
 of organic compounds by cupric salts. Part II, 1579.
 of organic compounds with quinquevalent vanadium. Parts VII, VIII, 630, 4757.

N-Oxides and related compounds. Part XVIII, 43.

Oxyanions of transition metals, structure and reactivity. Part XI, 3204.

Oxygen, organic compounds of, thermodynamic properties. Parts II, III, 2236, 2241

Ozonolysis of polycyclic hydrocarbons. Parts II—IV, 1232, 3858, 3864.

P

Palladium, tritertiary arsine complexes of, 4433.
catalysts, activation effects of various oxide carriers on, 4137.

difluoride and complex fluorides of palladium, prep. in selenium tetrafluoride, 3728.

Palladium(II), complexes with nitric oxide, prep., 775.

Palladous [³⁵Cl]chloride, decomposition of, 639.

Pectic acid from lucerne (*Medicago sativa*), 4215.

non-esterified, from *Nitella translucens*, 5333.

substances from lucerne (*Medicago sativa*). Part I, 4215.

Pentanoic acid, 5,5,5-trifluoro-4-oxo-, cyanohydrins of, 4519.

(±)-**Pent-3-en-2-ol**, 4-phenyl-, dissymmetric hydrogenation of, 670.

D-Pentoses, 2-acetamido-2-deoxy-, epimerization, 1577.

Pentyl. See *t*-pentyl.

Peptides containing one glutamic acid residue, fission of, 524.

and proteins, degradative studies. Part VI, 3161.

Peptide links, specific chemical fission of. Part III, 524.

Peptide-nucleotidates, prep., 2053.

Periodate oxidation. Part VI, 2525.

Peroxides, rôle in the autoxidation of elaidic acid and oleic esters, 4324.

of elements other than carbon. Part VII, 341.

organic. Parts V, VI (J. I. G. Cadogan *et al.*), 3879, 5236.

Part X (A. G. Davies *et al.*), 4390.

p-nitrophenyldiphenylmethyl, decomposition, 5236.

Pharmacodynamic compounds. Part II, 633.

Phenanthrene, kinetics and mechanism of chlorination in acetic acid, 5285.

free-radical phenylation of, 73.

Indeno(2',3':1,2)phenanthrene, new prep., 3361.

Indeno(2',3':1,2)phenanthrene, 4'-isobutyl-6'-methyl-, prep., 4230.

Phenanthrenes, 1,2,3,4-tetrahydro-9,10-diaza-, attempted prep. from cyclohexane-1,2-dione monophenylhydrazones, 4256.

Phenanthridine, 10-methyl-, prep., 2249.

$\alpha\omega$ -Di(phenanthridin-6-yl)alkanes, prep., 3664.

N-Methylbenzophenanthridones, independent prep. and formation by internuclear cyclisation, 3873.

Phenanthridines, cyclisation of biphenyl derivatives to, 3771.

Pheniramine, resolution of, 2228.

Phenol, competition with aniline for triphenylmethyl cation, 575.

vibrational assignment and calculated thermodynamic properties, 2236.

4-amino-2-methoxy-, ethers of, prep., 1863.

4-methyl-2,6-di-*t*-butyl-, steric inhibition of hydrogen-bonding in solutions of, 2557.

4-nitro-2,6-di-*t*-butyl-, prep. and thermal decomposition, 953.

2,4-dinitro-, equilibria with mono-, di-, and tri-*n*-butylamine in aprotic solvents, 417.

Phenols, biosynthesis of. Part III, 2312.

bromination of, kinetics, 63.

o-amino-, stability constants of metal complexes of, 2244.

heterocyclic, thermochromism of, 182.

new, prep., 2773.

substituted, ionisation constants of, 388.

ortho-substituted, association with ethers, 4762.

Phenolic radicals, oxidative pairing of. Parts I, II, 4067, 4075.

Phenoxide ions, reaction of dichloromethylene with, kinetics, 1663.

Phenyl peroxide, di-*p*-(2-amino-2-carboxyethyl)-, prep. from tyrosine and probable natural occurrence in proteins, 3193.

Phenylation of naphthalene, determination of total and partial rate factors, 3112.

of nitrobenzene, relative rate of, redetermination, 565.

free-radical, of phenanthrene, 73.

p-methyl-, of nitrobenzene and chlorobenzene, 3108.

Phospholipids. Part VII, 3774.

Phosphorus, analogues of aminodiarylboranes, prep., 1000.

heterocyclic compounds of, synthesis and stereochemistry. Part II, 2133.

nitrogen compounds of. Part I, 872.

organic acids of, anhydrides. Part II, 4904.

organic compounds of. Parts I—III (Z. Pelchowicz *et al.*), 238, 241, 4348.

organic compounds of, reactivity. Parts IV—X (J. I. G. Cadogan *et al.*), 3067, 3071, 3076, 3079, 5524, 5532, 5542.

esters, reaction with carbonyl chloride, 3067.

PCl₃ and OPCl₃, anisotropies of the molecules, 2612.

pentachloride, interaction with tertiary amines, 1730.

pentoxide-calcium oxide system, high-temperature studies of, 4442.

phosphoric anhydride, tri- and tetra-alkyl esters, prep., 4904.

Bis(triphenylphosphine)nickel dinitrosyl, prep., 2259.

Boranes, phosphino-aryl-, 5053.

Borines, dialkylphosphino-, trimeric, and some *B*-halogenated derivatives, prep. and infrared spectra, 1822.

Calcium hydrogen phosphate precipitated from solutions of calcium nitrate and phosphoric acid, stability, 4914.

Cobalt(III) ammine phosphates, phase-diagram studies of, 86.

Cyclootetraphosphonitrile, octamethyl-, crystal structure, 5471.

Cyclotriphosphazatriene, alkylamino- and dialkylamino-derivatives of, prep., 872.

Ethyl ethylphosphonothiolate, concerted action of fluoride and silver ions on, in aqueous solution, 4624.

Hypophosphate, prep. and determination, 1079.

Hypophosphate, dithionate, and related ions, vibrational spectra and structures, 1552.

Inositide, a monophospho-, structure, 3774.

Orthophosphoric acid, and water, rates of oxygen exchange between, 1636.

9-Phosphafluorene 9-oxide, (+)-2-carboxy-9-phenyl-, loss of optical activity in reduction of, 2133.

Phosphates, reactions with *O*-benzenesulphonyl-lactams, 1641.

cyclic, prep. from cyclic phosphites, 710.

cyclic, of *D*-glucose, prep., 448.

cyclic, of 1,2-*O*-isopropylidene-*D*-glucofuranose, five-, six-, and seven-membered, 448.

organic, reactions of. Parts IV, V, 1636, 2670.

trialkyl, interaction with boron trichloride, 4095.

trialkyl, reaction with sodium *NN*-diethyldithiocarbamate, 3164.

trialkyl, interaction with silicon chlorides, 4680.

trialkyl, reaction with thiourea, 442.

tri-*n*-alkyl, radiolysis of, 4098.

triphenyl and trimethyl, hydrolysis, 2670.

Dibutyl phosphate-potassium perhenate-aqueous nitric acid system, heterogeneous equilibria in, 5046.

Guanosine diphosphate glucose, prep., 2574.

Tributyl phosphate-nitrous acid complex, 1705.

Tributyl phosphate-potassium perhenate-aqueous nitric acid system, heterogeneous equilibrium in, 1921.

Phosphine, conductimetric titration with sodium in liquid ammonia, 2676.

dibutylphenyl- and butyldiphenyl-, tetrahedral nickel(II) complexes with, 2705.

triphenyl-, adducts with dimethyl acetylenedicarboxylate, 2126.

o-Phenylenebis(diethylphosphine), reaction with metals, 5504.

Phosphines, 1-hydroxyalkyl-, rearrangement to alkylphosphine oxides, 2813.

tertiary, complexes with ruthenium(II) and osmium(II), 896.

di- and tri-tertiary, reactions with the hexacarbonyls of metals of Group VI, 4980.

triaryl-, complexes with nickel(II), 4816.

- Phosphorus: Phosphines**, Diphosphine dioxides. Part II, 2423.
Diphosphine dioxides with mono-, di-, and tri-methylene bridges, prep., 2423.
- Phosphine oxide complexes**. Parts IV, V, 2298, 3735.
triphenyl-, as ligand in tetrahedral complexes of manganese(II), 3735.
triphenyl-, molybdenum(II) complexes containing, 750.
- Phosphine oxides**, complexes with copper(II), prep., 2298.
alkyl-, rearrangement of 1-hydroxyalkylphosphines to, 2813.
- Phosphinimine, *N*-methyltrichloro-, dimer, prep., 1825.
- Phosphites**, ammonium alkyl hydrogen, prep., 5050.
cyclic, oxidation to cyclic phosphates, 710.
dialkyl-, reactions of alkali derivatives of, 4348.
dialkyl-, reaction with sodium *NN*-diethylthiocarbamate, 3164.
dialkyl-, reaction with thiourea, 442.
organic, reactions with chloramine-*T*, 3079.
trialkyl-, reaction with trichloromethyl radicals, 3071.
triaryl-, conductance of solutions in, 311.
Nucleoside phosphites, prep., 2316.
- Phosphobetaines**, prep. and properties, 1266.
containing a basic group, use in Wittig reaction, 2130.
phosphonates, methyl-, and methylphosphonothionates, dialkyl-, reaction with inorganic acid chlorides, 238.
- Phosphonic dichloride**, triphenylmethyl-, structure, 3542.
- Phosphonitrilic chlorides**, trimeric and tetrameric, heats of formation of, 430.
derivatives. Parts IV—VII, IX, 430, 1768, 1825, 4777, 5471. (Part VIII, *J.*, 1962, 635.)
fluoride, tetrameric, crystal structure, 4777.
halides, delocalization and magnetic properties, 1376.
Triphosphonitrilic fluoride chlorides, prep., 1768.
Triphosphonitrilic 1,1-difluoride 3,3,5,5-tetrachloride, nuclear magnetic resonance spectra, 1382.
- Phosphonium halides**, alkyltriphenyl-, reduction with lithium aluminium hydride, 4263.
salts containing a basic group, use in Wittig reactions, 2130.
salts, arsino-, prep., 3208.
- Phosphor- and phosphon-amidates, *N*-chloro-, prep., 3076.
- Phosphoramidic acids**, *N*-acyl-, hydrolysis of. Part IV, *N*-benzenesulphonylphosphoramidic acid, 3158.
- Phosphoric acid**, effect of pressure on first acid dissociation constant of, 1765.
acid esters of, reaction with acetimidates, 1805.
alkyl esters, solvent-extraction of beryllium from aqueous solutions of mineral acids by, 174.
Phosphoric acid-chromium(III) system, phase diagram at 70° and ion-exchange studies in, 291.
- Phosphorothioates**, dialkyl-, and their reaction with chloral, 241.
- Phosphorothiolates**, reaction with alkyl iodides, 5542.
Triethyl phosphorothiolate and related compounds, reactions with chloramine-*T*, 5524.
- Phosphorothionates**, reaction with alkyl iodides, 5532.
- Phosphoryl chloride-boron trichloride complex**, structure, 4255.
- Propionic esters**, β -(diarylphosphino)-, abnormal hydrolysis. Part I, 5454.
Pyrophosphate ion, *P*¹*P*¹-diethyl-, existence of, 4321.
Silver hexafluorophosphate, prep., 4689.
Sugars, phosphorylated. Part III, 448.
- Phosphorylation**. Parts XXII, XXIII, 715, 722.
oxidative, experiments on, 1808.
- Photochemical transformations**. Part XI, 3313.
- Photochromism** in some spiropyrans. Part III, 156.
- Phototransformation** in spiropyrans, extent of, 156.
- Phthalimides**, thio-, prep., 5055.
- Phthalocyanines**, absorption spectra of, 866.
- Phthalocyanine complex**, micromethod for determination of valency of a metal in, 869.
- Phthalocyanine-chromium complexes** and perpendicular conjugation, 1257.
- Physical properties and chemical constitution**. Part XXXII, 570.
- 3-Picoline 1-oxide**, reaction with acetic anhydride, 5216.
- Picolinic acid**, silicon esters of, co-ordination in, 3897.
- Picrates**, metho-, double, of certain heterocyclic tertiary amines, prep., 3845.
- Picrolicenic acid**, prep., 4075.
- Picrotoxin and tutin**. Parts XI, XII, 3000, 3006.
- Pimaric acid**, sandaraco- and crypto-, constitution, 752.
- Pinacol** and its monomethyl ether, kinetic resemblance between oxidations of α -hydroxy-acids and, 630.
- Pinacols**, mixed, prep. by cathodic reduction. Part II, 2081.
symmetrical, prep. by cathodic reduction, 757.
- α -Pinene**, reaction with lead tetra-acetate, 2232.
- Pipecolic acid**, 4-hydroxy-, from *Acacia* species, and its stereoisomers, 189.
- Pipecolic acids**, hydroxy-, application of Hudson's lactone rule to: an anomaly, 4268.
- Piperidine-pyrrolidine series**, rearrangements in, 633.
- Plant growth-regulating compounds**, relationship of structure to activity in. Part I, 2335.
- Platinum catalysts**, effects of various oxide supports on the activity of, 5086.
tertiary arsine complexes of, 4433.
"Cyclopropane platinumous chloride," structure, 738.
Ethylene-platinum chloride pyridine *N*-oxide, 2254.
PtCl₅²⁻-I⁻ and PtBr₆²⁻-I⁻ replacement reactions, 2981.
Platinum(II), complexes with acetylenes. Part I, alkynes, 827.
Platinum(II), complexes with nitric oxide, prep., 775.
Platinum(II), five-co-ordinate complexes of, prep., 3699.
Platinum(II), thiocyanato-bridged complexes of, 1416.
- Plutonium trifluoride** and tetrafluoride, solubility in nitric acid mixtures, 2464.
tetrafluoride, vapour pressure, 2031.
Plutonium(IV) oxalate, solubility in nitric acid mixtures, 2464.
- Podocarpene**, 7,8-dimethoxy-, prep., 4425.
- Podocarpene-6,7-diol**, prep., 4430.
8-isopropyl-(6-hydroxytotarol), prep., 4425.
- Polar effects**, transmission through aromatic systems. Parts I, II, 2221, 2938. Part III, Hammett σ -constants, 3247.
- Polarisability**, molecular, 1671, 2356, 2612, 4140, 4144, 4148, 4447.
- Polarization**, dielectric, of some imperfect polar gases, 5511.
molecular, of amines in benzene and carbon tetrachloride, 2974.
bonding, molecular complexes exhibiting. Part III, 494.
- Polarographic behaviour** of 2-methyl-1,2-di-3'-pyridylpropan-1-one, 1420.
behaviour and controlled-potential electrolysis of 1,1-dinitroethane and dinitromethane, 5325.
reduction of carbohydrates, 3487.
reduction of some heterocyclic molecules. Part III, 5297.
- Polyacetylenes** in *Polyporus anthracophilus*, 1654.
biosynthesis. Parts III, IV, 1654, 3544.
rate of synthesis by Basidiomycete B.841, 3544.
- Polyanion equilibria** in aqueous solution. Part I, 5317.
- Polyazaindenes**, structure. Part VIII, 3046.
- Polycyclic systems**. Parts IX, X, 3361, 4230.
- Polyelectrolytes**, influence of counter-ion fixation on molecular weight and shape of, 3974.
- Polyhydroxy-compounds**, acyclic, complexes with molybdate, 35.
- Polymer**, deeply coloured, electrically conducting, mechanism of formation, 1964.
- Polymers**, deeply coloured, electrically conducting, prep. and properties, 1953.
and monomers containing Sn-O-As(v), prep., 445.
- Polymerisation** of epoxides. Part III, 4298.
- Polynuclear compounds**. Part I, 396.
- Polypeptides**. Parts VI, VII, 1749, 1752.
polymeric, of lanthionine, prep., 459.
- Polyporic acid series** (potential anti-tumour agents), prep., 936.
Polyporus anthracophilus, polyacetylenes and triterpenes in, 1654.
Polyporus hispidus (Bull.) Fr., a new 4-hydroxy-6-styryl-2-pyrone (hispidin) from, 4995.
- Polyasaccharides** of baker's yeast. Parts IV, V, 29, 3918.
from the green seaweeds of *Caulerpa* spp. Part III, 3010.
of the Characeae. Parts I, IV, 2914, 5333.
sulphated, estimation of relative amounts of isomeric sulphate esters in, 5168.

- Poly-*p*-xylylene** and related polymers, prep., 1604.
- Porphins**, tetraza-, absorption spectra of, and formation of pyridine salts from, 866.
- Porphyra umbilicalis**, a red alga, carbohydrates from, 1590.
- Porphyryns**, proton magnetic resonance spectra. Part I, 3468.
effect of β -substitution on the proton chemical shifts of, 3468.
formation by cyclisation of bilenes, 2418.
- Porter-Silber reaction**, 2027.
- Potassium hydrogen di-*p*-nitrobenzoate**, crystal structure, 1151.
- Prednisolone**, 9 α -fluoro-16 β -methyl- prep., 4560.
- Pregna-5,9(11),16-trien-20-one**, 3 β -hydroxy-, prep. from botogenin, 1859.
- Pregn-4-ene-3,20-dione**, 16 α ,17 α -isopropylidenedioxy-6 α -methyl-, prep., 4111.
- 5 α -Pregn-9-ene-3,20-dione**, 21-acetoxy-17-hydroxy-16 β -methyl-, partial synthesis, 4547.
- Prodine**, alpha- and beta-, action of thionyl chloride on alcohols derived from, 5057.
- Progesterone**, 6 α ,16 α -dimethyl- and 17 α -acetoxy-6 α -methyl-16-methylene-, prep., 2821.
- Propane**, 2,2-dinitro-, reduction processes, studied by controlled-potential electrolysis, 4773.
- Propanols**, 2-phenyl-, related to the hydratropic acids, prep., 171.
- Propan-2-ol**, 1-chloro-3-fluoro-, reactions of, 3448.
- Propan-1-one**, 2-methyl-1,2-di-3'-pyridyl-, polarographic behaviour, 1420.
- Propiolic acid**, methyl ester, reaction with pyridine, 3497.
2-methoxy-4- and -5-methylphenyl-, prep. and reactions, 2528.
- Propiolic acids**, phenyl-. Part VII, 2528.
- Propionic acid**, β -(diarylphosphino)-, esters, abnormal hydrolysis. Part I, 5454.
 β -(2,5-dimethylbenzoyl)- α - and - β -phenyl-, conversion into polynuclear compounds, 2701.
 β -(8-oxo-2-tetralyl)-, attempt to cyclise, 2520.
 β -phenyl-, ionisation constant at 25°, 275.
- Propionic acids**, β -aroyl-. Parts XVIII—XX, 707, 1083, 2701.
 β -aroyl-, conversion into 4,5-diarylfuran-2,3-dicarboxylic acid, 707.
 β -aroyl- α -arylmethylene-. Part II, prep. and mechanism of isomerisation of their enol lactones, 1658.
- Propionyl chloride**, interaction with decalin and aluminium chloride, 4306.
- Propylene oxide**, polymerization by sodium alkoxides, 4298.
- Protactinium-(iv)** and -(v), absorption spectra in certain solutions, 3804.
- Proteins and peptides**, degradative studies. Part VI, 3161.
probable natural occurrence of di-*p*-(2-amino-2-carboxyethyl)phenyl peroxide, 3193.
study of *N*-terminal residues in, 3254.
- Pteridine**, derivatives of. Part VIII, 476.
studies. Parts XIII—XV, 127, 4413, 5131.
2-amino-4-hydroxy-, and related compounds, methylation, 4413.
2-hydroxy-, reduction, 5131.
- Pteridines**, 6-hydroxy-, addition to, 127.
- Purines**, pyrimidines, and imidazoles. Parts XV, XVI, 3254, 4845.
8-substituted, prep., 4468.
9-amino-, prep. from 1-aminoimidazoles, 4845.
chloro- and others, prep. by a novel cyclisation of 4,5-diaminopyrimidines, 5048.
9-dimethylamino-, prep., 3818.
- Pyran**, tetrahydro-2-hydroxymethyl-, silyl ethers of, 5256.
- Pyrans**, spiro-, photochromism in. Part III, 156.
- Pyraquinolines**. Part II, 2796.
- Pyrazine**: Pyrido(2',3'-2,3)pyrazines, 5,6-dipyridyl-, prep., 2258.
- Pyrazole**, hydrogen bonding of, in carbon tetrachloride solution, 140.
3-methyl-1,5-diphenyl-, monosulphonation products, 3851.
- Pyrazoles**, substituted, hydrogen bonding in carbon tetrachloride solution, 4201.
aryl-, sulphonation of. Part I, 3851.
- Pyrazoles**, bromo-1-phenyl-, orientation of, 2769.
4-formyl-1-phenyl-, prep. and reactions, 2733.
- Pyrazolo[3,4-*d*]pyrimidines**, 1- and 2- β -D-ribofuranosyl-, prep., 2589.
- Pyridine**, reaction with methyl propiolate, 3497.
4-amino-, influence of steric factors on properties of derivatives of, 3939.
pentafluoro-, prep., 1740.
2-, 3-, and 4-methanesulphonamido-, basicities and spectra, 378.
2,3-dimethyl- and 2,4,6-trimethyl-, isolation from coal tar by a new method, 5556.
Ethyl 2- and 4-pyridylacetate, condensation with aromatic compounds, 5074.
Ethylene-platinous chloride pyridine *N*-oxide, 2254.
Isopropyl methyl ketone 3-pyridylhydrazone, cyclisation of, 584.
2,2'-Pyridil dioxime and 2,2'-bipyridyls, quaternary derivatives of, 759.
- Pyridines**, potentially tautomeric. Part III, 378.
substituted, electric dipole moments of, 4522.
4-substituted, proton nuclear magnetic resonance spectra of, 43.
Pyridine-1-oxide, free-radical substitution of, 18.
- Pyridine 1-oxides**, proton nuclear magnetic resonance spectra of, 43.
substituted, electric dipole moments of, 4522.
- Pyridones**, prep. from pyrones, 4490.
- 2-Pyridones**, and related systems, estimation of aromatic character by nuclear magnetic resonance spectroscopy, 859.
1-hydroxy- and 1-amino-, prep. from pyrones, 4490.
- Pyrido(2',3'-2,3)pyrazines**, 5,6-dipyridyl-, prep., 2258.
- Pyridoxal**, non-enzymic reaction with alanine, 4235.
phosphate, formation of a thiazolidine derivative in aqueous solution with L-cysteine, 4051.
- Pyridoxamine**, non-enzymic reaction with pyruvic acid, 4235.
- Pyrimidine reactions**. Part III, 1298.
4-amino-6-hydroxy-, and related compounds, methylation product of, 1298.
4,5-diamino-2-hydroxy-, simple route to, 760.
- Pyrimidines**, purines, and imidazoles. Parts XV, XVI, 3254, 4845.
Pyrazolo[3,4-*d*]pyrimidines, 1- and 2- β -D-ribofuranosyl-, prep., 2589.
- Pyrolysis**, studies in. Part XVI, 1782.
of *n*-butane, rôle of surfaces in, 4128.
- Pyrone series**. Part IV, 4490.
- 2-Pyrone**, a new 4-hydroxy-6-styryl- (hispidin), from *Polyporus hispidus* (Bull.) Fr., 4995.
- 2-Pyrones**, 5-aryloxy-, prep., 4490.
4,5,6-triphenyl-, prep., 4490.
- Pyrocoline**: 1-Ethyl-1,2,3,5-tetrahydro-10-methyl-7,8-methylenedioxy-5-oxobenzof[*f*]pyrocoline, prep., 4350.
- 2*H*-Pyrroles**, guanidino-, prep., 4672.
guanidino-, condensation with ethyl cyanoacetate, stoichiometry and kinetics, 4332.
- Pyrrrole-1-carboxylate**, methyl, reaction with dimethyl acetylenedicarboxylate, 457.
- Pyrrolidine-piperidine series**, rearrangements in, 633.
- Pyrylium salts** and related compounds. Part I, 3573.
reaction with alkali cyanides, 3566.
formed in diacetylation of 2-methylbut-2-ene, 3553.
obtained by diacetylation of olefins. Parts II—IV, 3553, 3561, 3564.
- Q
- op'*-Quaterphenyl**, prep., 748.
- Quebracho tannin extract**, occurrence of 2-benzyl-2-hydroxycoumaran-3-ones in, 3234.
- Queen substance** (*trans*-9-oxodec-2-enoic acid), prep., 3813.
- Quinaldine**, reaction with sulphuric acid, 1098.
- Quinapyramine** (Antrycide), bisquaternary salts related to, 5275.
- Quinazoline**, cation, hydrated, structure, 5267.
cations of, 2689.
1,4- and 3,4-dihydro-, prep., 2697.

Quinazolines. Parts I—III, 2689, 2697, 5267.
Quinazolinium salts, amidinophenyldiazoamino-, prep., 4041.
Quinic acid, 3-*O-p*-coumaroyl-, prep., 5153.
 α -Quinindones, 2,3-dihydro-, prep., 4295.
Quinol, hydroxy-, derivatives of. Parts II, III, 792, 798.
 phosphates, phosphorylation accompanying oxidation of, 715.
 monophosphates, prep. from vitamin K₁, ubiquinone, and other quinones, 1808.
Quinoline series. Part II, 1098.
 3-acetyl-4-hydroxy-, derivatives of, prep. of pyranoquinolines from, 2796.
 8-hydroxy-, complexes with dibutyl- and diphenyl-tin radicals, 756.
 ethiodide, polarographic reduction, 5297.
 Quinapyramine (Antrycide), replacement of the quinoline nucleus by other heterocycles, 5275.
Quinolines, 1,2-dihydro-1,4-dihydroxy-2-oxo-, prep. by reductive cyclisation with hydrazine hydrate and palladium-charcoal, 5058.
 6-methoxy-8-(ω -piperazin-1'-ylalkylamino)-, prep., 2404.
 1*H*-Cyclopenta[*c*]quinolines, 2,3,4,5-tetrahydro-4-oxo-, prep., 4295.
 Pyranoquinolines. Part II, 2796.
Quinolinium salts, amidinophenyldiazoamino-, prep., 4041.
Quinolizines: 3-Alkyl-1,3,4,6,7,11b-hexahydro-9,10-dimethoxy-2*H*-benzo[*a*]quinolizines, 2-ketones and 2-alcohols derived from, new prep., 4711.
Quinones, naturally occurring. Parts IV, V, 485, 1008.
 dehydrogenation of substituted 1,2-dihydronaphthalenes by, 4794.
1,2-Quinones, prep. from derivatives of 2,7-dihydroxy-naphthalene, 5293.
Quinoxalines and related compounds. Part V, 1246.
 1,2-dihydro-2-oxo-, experiments with, 1246.
 2,3-dipyridyl-, prep., 2258.
Quinoxaline-2,3-diones, infrared spectra, 3983.

R

Radiation, ionizing, chemical action on simple aliphatic alcohols. Parts I, II, 3962, 3970.
 γ -Radiation, see Gamma-radiation.
Radiation chemistry of azide solutions. Parts I, II, 1479, 1487.
 of carbohydrates. Parts VII, VIII, 3756, 3763.
Radical-ions, SO₃⁻ and NO₂²⁻, 7.
Radicals, alkoxy. Part I, 1788.
Reactivity, aromatic. Parts XII—XXI, 297, 247, 542, 1012, 2388, 3715, 4921, 4927, 5077, 5082.
Rearrangements, molecular. Part VI, 2616.
Redox-transfer, chlorine activation by. Part I, 2261.
Refraction, double, electric, of solutions containing optically active solutes, 2356.
Reimer-Tiemann reaction, "abnormal", applications of, 2251.
Reserpine acid, methyl ester, suppression of 1,3-diaxial interaction in, during alkaline hydrolysis, 4252.
Resolution of α -hydroxy-amidinium chlorides by the use of mandelic acids, 3181.
L-Rhamnose, 2,5-di-*O*-methyl-, prep., ionophoresis, and conversion into 6-deoxy-2,5-di-*O*-methyl-L-altrose, 4649.
Rhenium, septavalent, solvent extraction of. Parts I—III, 1921, 1926, 5046.
 oxyfluorides and pentafluoride, vapour pressures, 1568.
 System, aqueous nitric acid-potassium perchlorate-dibutyl phosphate, heterogeneous equilibria in, 5046.
 System, aqueous nitric acid-potassium perchlorate-tributyl phosphate, heterogeneous equilibria in, 1921.
 System, aqueous nitric acid-potassium perchlorate-"trisoctylamine", heterogeneous equilibria in, 1926.
Rhodanines, 3-substituted, and their thiazine analogues, prep., 3733.
Rhodone, complexes with olefins, observations on, 1418.
Rhododendron westlandii, an epoxyglutinane from, 551.
Rhus cotinus wood (young fustic), colouring matter of, 3538.
D-Ribitol, 4-*O*-(β -D-glucopyranosyl)-, a degradation product of the ribitol teichoic acid from walls of *Bacillus subtilis*, prep., 2180.

Riboflavin, new prep., 476.
1- and 2- β -D-Ribofuranosylpyrazolo[3,4-*d*]pyrimidines, prep., 2589.
D-Ribose, 2-acetamido-2-deoxy-, prep. from derivatives of 3-acetamido-3-deoxy-D-altrose, 1463.
Ring systems, fused seven-membered, structural and conformational aspects in, 1429.
Roselle fibre (*Hibiscus sabdariffa*), hemicelluloses of, 5262.
Rotenoids, b/c-ring system, 2876.
 relative stereochemistry, 1448.
 Sumatrol and malacol, structure and stereochemistry, 5445.
Rotenolols, structure and stereochemistry, 2861.
Rotenolones, structure and stereochemistry, 2861.
Rotenone, absolute configuration, 2843.
Rubidium hydrogen di-*o*-nitrobenzoate, crystal structure, 1151.
Rubropunctatin, further evidence for structure, 3820.
Rutaceae of Hong Kong, examination of. Part VII, the essential oils, 3551. Part VIII, 4360.
Ruthenium, alkyl, aryl, and hydrido-complexes of, ultraviolet spectra to determine ligand field strengths of some anions, 772.
 nitrosyl-, complexes of, deformation frequencies of OH groups in, 4444.
 Ruthenates and perruthenates, spectra, 5039.
 Ruthenium red, cation, 2000.
 Ruthenium(II), hydrido-complexes, prep., 2605.
 Ruthenium(III), complexes of tertiary phosphines with, prep., 896.

S

Salicylaldehyde: Disalicylaldehydenickel, structure, 2594.
Salicylaldehydes, substituted, infrared spectra, 3372.
Salicylic acids and their esters, substituted, infrared spectra, 661.
Salts, acid, of some monobasic acids, crystal structures. Parts V, VI, 1151, 1164.
Sandaracopimaric acid, constitution, 752.
Sapogenins, steroidal. Part XL, 1859.
 12-oxo-, reaction with selenium dioxide, 1859.
Sarcosine, N-phenylthiocarbamoyl-, derivatives of, cyclisation and degradation, 3161.
s-Butyl chloride, pyrolysis of, and direction of eliminations from s-butyl compounds, 2756.
Schistosomiasis, chemotherapy of. Part IV, 1863.
Schmidt reaction with 3'-oxoindeno(2',1'-2,3)thiophen: structure of the product, 1408.
Scymmol, anhydro-, and scymmol sulphate, 2817.
 β -Sedoheptitol (D-glycero-D-glucoheptitol), cyclic acetals of, structure, 3633.
Selenium tetrafluoride, fluorination of the trioxides of chromium, molybdenum, tungsten, and uranium by, 3549.
 tetrafluoride, prep. of palladium difluoride and complex fluorides of palladium in, 3728.
 oxychloride, interaction with the trichlorides of boron and aluminium, 3165.
 Diselenocarbamic acids, *NN*-dialkyl-, derivatives of, prep., 2922.
Semicarbazides and thiosemicarbazides, 4-substituted I-amidino-, prep. and cyclisation, 5137.
Semicarbazones, thio-, hydrogen bonding in, 957.
Semiquinones, polycyclic, and their derivatives, electron-spin resonance spectra and odd-electron distribution, 4273.
Serine, enzymic resolution of, 763.
Shellolic acid, confirmation of structure, 5251.
Side-chain reactivity, influence of nitro-group upon. Parts I, II, 217, 221.
Silicon chlorides, interaction with trialkyl phosphates, 4680.
 esters of picolinic acid, co-ordination in, 3897.
 halides, reactions with sulphoxides, 3224.
 tetranitrate, 1:2 addition compound with pyridine, and related compounds, 4249.
 Disilthiane, hexamethyl-, reactions with alcohols, thiols, acids, and amines, 4933.
 Disilylcyanamide, prep. and properties, 4879.
 Silane, ethylthiotrimethyl-, reactions with alcohols, thiols, acids, and amines, 4933.

- Silicon Silicates**, hydrothermal chemistry. Parts IX, X, 971, 983.
- Silicates, nitrogenous alumin-, hydrothermal chemistry, 971.
- Silyl ethers of tetrahydro-2-hydroxymethylpyran, 5256.
- System $\text{CaO}-\text{Al}_2\text{O}_3-\text{SiO}_2-\text{H}_2\text{O}$, hydrothermal study, 983.
- Trialkylsilyloxides and silanols, infrared spectra, 2601.
- Trimethylsilyl derivatives of diphenyl ether, diphenyl sulphide, furan, thiophen, benzothiophen, dibenzofuran, dibenzothiophen, and 9-ethylcarbazole, acid cleavage, 4921.
- Silver complexes** of some *NN*-substituted 2-hydroxyethylamines, stability constants, 3169.
- fluoroborate, prep., 4689.
- trifluoromethylthio-, prep. and properties, 2597.
- hexafluorophosphate, prep., 4689.
- Skatole**, 5-hydroxy-, prep., 746.
- Sodium azide**, action of *X*-rays (200 kv) on deaerated aqueous solutions of, 1479; in the presence of different organic solutes, 1487.
- borohydride, reduction of 1,2- and 1,3-diketones, 910.
- hydrogen diacetate, crystal structure, 1164.
- Solanum*, some species of, constituents, and a reassessment of solasodamine and solauricine, 4645.
- alkaloids. Part XV, 4645.
- Solasodamine**, constitution, 4645.
- Solauricine**, constitution, 4645.
- Solids**, active, production by thermal decomposition. Part XIII, 1252.
- Solubilities** in liquid hydrogen chloride of derivatives of Groups IV, V, and VI, 1238.
- Solvation of ions**. Part II, 1328.
- Solvent-extraction** of beryllium from aqueous solutions of mineral acids, by alkyl esters of phosphoric acid, 174.
- of nitric acid from aqueous solution, 90.
- of septivalent rhenium. Parts I—III, 1921, 1926, 5046.
- Solvolysis** of γ -phenyltetric acid enol esters, mechanism. Parts I, II, 5421, 5430.
- $S_{\text{N}}1$, in 50% aqueous acetone, activation parameters for, 2045.
- D-Sorbitol**, aqueous solutions in oxygen, action of γ -radiation on, 3756.
- deaerated solutions of, action of γ -radiation on, 3763.
- Soret effect**, optical studies of. Part I, modified optical beam-displacement method and its application to aqueous silver nitrate, 3432.
- Sorption** of mixtures, and selectivity in alkylammonium montmorillonites. Parts I, II, 842, 850.
- Spectra**: aromatic hydrocarbons, steric effects on, 2063.
- inorganic complexes in non-aqueous solvents. Part I, 5105.
- absorption**: biliverdin, 2264.
- copper and iron complexes, 4630.
- dithizones, mono- and di-*p*-bromo-substituted, and their metal complexes, 2118.
- dyes in solution and adsorbed in solid films, 1209.
- glycogen- and amylopectin-iodine complexes, 1183.
- ketones. Part VI, 1224.
- tetrazaporphins and phthalocyanines, 866.
- Singlet-triplet transitions, magnetic perturbation of. Parts V, VI, 1987, 2566.
- charge-transfer**, intramolecular, and intensified $n \rightarrow \pi^*$ transitions, in benzo-homologues of bicyclo[2,2,2]octenone, 1224.
- electronic absorption**: Malachite Green derivatives containing substituents in the phenyl ring, 1285.
- Malachite Green derivatives containing *ortho*-substituents in the dimethylaminophenyl groups, 1529.
- Michler's Hydrol Blue, α -alkyl derivatives of, 1395.
- electron-spin resonance**: $-\text{CH}(\text{CO}_2\text{H})\cdot\text{CH}_2\cdot\text{CO}_2\text{H}$ in γ -irradiated DL-aspartic acid hydrochloride, 4264.
- aryl carboxylic acids and their esters, 106.
- polycyclic semiquinones and their derivatives, 4273.
- infrared**: aliphatic nitro-alcohols. Part I, 1370.
- quaternary aldoximes and ketoximes, 2162.
- arylazonaphthols, 2151.
- benzamide, ^{18}O -labelled, 1688.
- N*-methylbenzamide, normal and ^{18}O -labelled, 2666.
- NN*-dimethylbenzamide, normal and ^{18}O -labelled, 3063.
- Spectra, infrared**: simple benzimidazoles, 2343.
- ^{18}O -labelled benzoic acid, benzoyl chloride, and methyl benzoate, 2382.
- borazoles and boroxoles, 1931.
- dichloro(ethylenediamine)-zinc, -cadmium, and -mercury, 477.
- cobalt(III) ethylenediamine complexes. Part II, 471.
- cycloheptatrieneiron carbonyl and related compounds, 594.
- dicyclopentadienyl-tin and -lead, 547.
- hemialdals esters, 2525.
- a biglycerol tricarbonatate, 581.
- polycyclic heteroaromatic compounds. Part II, 3983.
- some metal alkoxides, trialkylsilyloxides, and related silanols, 2601.
- metal carbonyls and their derivatives, solvent shifts in, 2582.
- chelate metal-ethylenediamine, complexes, 1112.
- nitrosylruthenium complexes, deformation frequencies of OH groups in, 4444.
- nucleic acid constituents, 504.
- diolefincobalt carbonyl complexes, 602.
- oxamides and thio-oxamides, 1919.
- 1,3-oxazine derivatives, 489.
- alkyl-substituted phenols (OH stretching frequencies), 4762.
- trimeric dialkylphosphinoboranes and *B*-halogenated derivatives, 1822.
- pyridine 1-oxides, 18.
- quinoxaline-2,3-diones, 3983.
- salicylaldehydes (substituted), 3372.
- substituted salicylic acids and their esters, 661.
- sulphonamidopyridines, 378.
- thiazoles, 3381.
- compounds containing the thiocyanate group, 471.
- thiosemicarbazones and thioamides, 957.
- some transition-metal perchlorates, 3091.
- luminescence**, some substituted naphthalenes, 3893.
- microwave**, of nitrosyl chloride, nuclear quadrupole coupling coefficients from, 1322.
- nuclear magnetic resonance**: studies in. Part IV, 1625.
- study of aromaticity. Part I, 859.
- configuration at the benzyldene acetal carbon atoms in 4,6-*O*-benzyldene-D-glucose and 1,3-*O*-benzyldene-L-arabinitol, 5005.
- bisbenzylisoquinoline and aporphine alkaloids, structural correlations in, 1896.
- cycloheptatrieneiron carbonyl and related compounds, 594.
- the di- π -cyclopentadienyl hydrides of tantalum, molybdenum, and tungsten, 4854.
- cis*-1,2-difluoroethylene, 743.
- 4-substituted pyridines and pyridine 1-oxides, 43.
- 2-pyridones and related systems, 859.
- triphosphonitric 1,1-difluoride 3,3,5,5-tetrachloride, 1382.
- high-resolution, of pentafluorosulphur compounds, 4736.
- proton resonance**, of cycloheptatriene complexes of Group VI metals, 2037.
- proton magnetic resonance**: structure determination of bicyclopentyl derivatives from cyclopentadiene, 1939.
- porphyrins. Part I, 3468.
- Raman**, of bis(trifluoromethylthio)mercury and derived compounds, 3187.
- ultraviolet**: quaternary aldoximes and ketoximes, 2162.
- bromobenzo[*c*]cinolines, 5029.
- benzo-homologues of bicyclo[2,2,2]octenone, 1224.
- 4-arylo-1-naphthylamines, 5163.
- chromate ions (monosubstituted), 3204.
- polycyclic cinolines and their *N*-oxides, 1363.
- absorption of isolated double bonds, 2075.
- polymerizing systems (of styrene), 734.
- protactinium(-iv) and (-v) in certain solutions, 3804.
- sulphonamidopyridines, 378.
- alkyl, aryl, and hydrido-complexes of ruthenium, 772.
- silicon esters of picolinic acid, 3897.
- vibrational**, of dithionate, hypophosphate, and related ions, 1552.
- visible**, of dimethinecyanine salts, 163.

- Spectroscopy**, nuclear quadrupole resonance, chemical applications of. Part IV, transmission of the electronic effect of various substituents by a phosphorus atom, 2459.
- Spinels**, effect of defect structure on rate of formation of, 2745.
- Spinochromes E and N** (quinones), prep., 1008.
- Spirans**, Part III, 327.
- Spiropentane** (spirobicyclopropane), thermal isomerization, 5550.
- Spiropyrans**, photochromism in. Part III, 156.
- 25D-Spirostan-6 α -ol**, 3 α ,5-cyclo-6 β -methyl-, 1821.
- 25D-Spirostan-6 β -ol**, 3 α ,5-cyclo-6 α -methyl-, prep., 1821.
- Stability constants** of metal complexes of *o*-aminophenols, 2244.
- of manganese(II) chloride complexes, 5148.
- Starches**, physicochemical studies on. Part XXIII, 1534.
- Starch-type polysaccharide** from *Nitella translucens*, 2914.
- Stearic acid**, ferric and cupric salts, conductance of, in aliphatic hydrocarbons, 466.
- Stereochemical structure**, studies in. Part XIV, 3181.
- Stereochemistry**, aspects of. Parts VI—IX (A. B. Foster *et al.*), 2338, 3633, 5005, 5011. Part XVIII (H. B. Henbest *et al.*), 4478.
- of molecules containing the C=C=N group. Part III, 2801.
- Steroid hormones**, compounds related to. Parts II—VII, 2532, 4531, 4535, 4547, 4560, 4573.
- hormones, modified. Parts XXI—XXIV, 2091, 2821, 4108, 4111.
- 3-ketones, pentacyclic structures from derivatives of, 4108.
- sapogenins. Part XL, 1859.
- Steroids**, Part CLXIX, 4057.
- examples of boat conformation of ring-A: methylation of 5 α -cholest-6-en-3-one, 767.
- and Walden inversion. Parts XLVII—XLIX, 1583, 3261, 3271.
- of unnatural configuration. Part VI, 4676.
- derived from hecogenin. Part II, some ring c-secod-derivatives, 3504.
- 4-substituted, by rearrangement and reduction of cholest-ene enol acetate, 2478.
- Aza-. Part II, 3641.
- 3-monohydroxy- and 3,17-dihydroxy-, and derivatives, optical rotatory dispersion, 5415.
- 4,4-dimethyl-, 3-epimeric toluene-*p*-sulphonates, prep., 3261.
- Porter-Silber reaction, nature of, 2027.
- Δ^4 -**Steroids**, 3,11-diketones, dienone-phenol rearrangement of, 4535.
- 3-oxo-, phenolic ethers from dienone-phenol rearrangement of, 4531.
- Δ^9 (11)-**Steroids**, prep. from 11 β -trifluoroacetates, 4573.
- Δ^1 -5 α -**Steroids**, 2-bromo-3-oxo-, action of hydrogen bromide on, 2532.
- Stilbenes**, α -alkyl- β -ethynyl-, prep. of acetylenic alcohols from, 1311.
- α -alkyl- β -ethynyl-4,4'-dihydroxy-, prep., 2291.
- cis*- and *trans*-3,3',4,4'-tetramethoxy-, prep., 2592.
- Stilboestrol**, acetylenic compounds related to. Parts III, IV, 1311, 2291.
- Streptomycin**, tautomeric forms of, 1337.
- Styrene**, cationic polymerization of. Parts I—III, 729, 734, 737.
- polymerization of, by aluminium chloride, cocatalytic action of water in, 737.
- methyl glycosides as transfer agents in polymerisation of, 3308.
- α -methyl-, prep. of 2-phenylbutadiene from, 370.
- poly-(*m*-amino-), and the copolymer with styrene, 3708.
- Poly-(*m*-styrenediazonium chloride) and related diazonium chlorides, kinetics of decomposition of, 3708.
- Submicro-methods** for organic analysis. Part XIII, 480.
- Substituents** in an aromatic nucleus, cumulative effect on reactions of the side chain, 4744.
- Substitution**, aromatic, *ortho* : *para*-ratio in. Parts I—V, 3030, 3604, 3610, 3885, 3888.
- aromatic halogen, kinetics and mechanisms. Parts X, XI, 2749, 5285.
- Substitution**, aromatic homolytic. Parts XXI—XXVI, 554, 562, 565, 3108, 3112, 3116.
- electrophilic, at a saturated carbon atom, mechanism. Parts III—VI, 1121, 1133, 1142, 2359.
- free-radical, in aliphatic compounds. Part III, 3520.
- free-radical, of pyridine 1-oxide, 18.
- nucleophilic, at a saturated carbon atom, dipolar aprotic solvents as media for, 1328.
- nucleophilic, concomitant first- and second-order, 4342.
- patterns of monosubstituted benzene derivatives, 3153.
- Succinates** of transition metals, ion association in, 4458.
- Succinic acid**, tungstate and molybdate complexes with, 3691.
- Succinimide**, *N*-bromo-, action on 1,2,3,4-tetraphenylcyclobutane, 479.
- Sucrose**, carbonic esters of. Parts I—III, 5359, 5365, 5370.
- Sucroses**, *O*-alkyloxycarbonyl-, prep., 5359.
- polymerisation, 5365.
- (**Sucrose carbonates**), poly-, direct prep. from sucrose, 5370.
- Sugar alcohols**, prep. of α -di-*O*-methanesulphonyl derivatives, 3656.
- series, mechanisms of reactions in. Parts III, IV, 412, 3240.
- Sugars**, characterisation as *p-p'*-nitrophenylazobenzoyl derivatives, 5544.
- aqueous solutions, activity coefficients of non-electrolytes in, 4906.
- amino-, and related compounds. Part VIII, 1204.
- phosphorylated. Part III, 448.
- Sulphonates**, *o*-alkyldiphenyl, action of aluminium chloride on, 4514.
- Sulphonhydrazides**, rearrangement of, 1743.
- Sulphoxides**, reactions with some Group III and IV halides, 3224.
- Sulphur**, nitrogen compounds with. Part II, 3625.
- chloride pentafluoride, reactions, 5554.
- reaction with unsaturated hydrocarbons, 2066.
- reaction with fluoro-olefins, 2070.
- monochloride, action on aromatic hydrocarbons, 4510.
- tetrafluoride as fluorinating agent for prep. of complex fluorides, 2496.
- trioxide, condensed phases of. Part I, vapour pressure and viscosity of the liquid phase at low temperatures, 2348.
- α -(Benzoylmethylthio)acetic acids, structural factors leading to either carbanion-sulphenium fission or benzoyl elimination by action of alkalis, 2393.
- Diethylsulphonyl-(2-*O*-methyl- α -D-arabopyranosyl)methane, prep. and behaviour with base, 5561.
- Dithionate, hypophosphate, and related ions, vibrational spectra and structures, 1552.
- Hydrogen sulphide, intracrystalline oxidation, 4741.
- Hydrogen sulphide, first acid dissociation constant at high pressure, 4678.
- p*-Nitrophenylmethylthio-acids, structural factors leading to either carbanion-sulphenium fission or α -proton extraction in, 2397.
- 4-Nitrophenylthio-derivatives of acetic, propionic, and related acids, mechanism of base-catalysed elimination from, 223.
- Pentafluorosulphur compounds, high-resolution nuclear magnetic resonance spectra, 4736.
- Radical-ion, SO₂, 7.
- Sulphides formed from *o*-nitrobenzenesulphonyl chloride and ketones, prep. and oxidation of, 367.
- Sulphides (thioethers), carbon-sulphur fission in. Parts V—VII, 2393, 2397, 2402.
- Sulphides (thioethers), carbanion-sulphenium fission in, kinetics and mechanism, 2402.
- Sulphides, organic, oxidation. Part X, 5339.
- Sulphides and olefins, co-oxidation of, 5339.
- Sulphuric acid, heat of autoprotolysis, 2962.
- "Sulphurous" acid, effect of pressure on first acid dissociation constants of, 1765.
- Tetramethylethylene sulphate, prep., 2257.
- Thiocyanate group, compounds containing, infrared spectra, 471.
- Thiocyanato-bridged complexes of platinum(II), 1416.
- Thiosulphate, reaction with *N*-methyl-di-(2-chloroethyl)-amine, 679.
- Thiosulphates, phenacyl, condensation with diazonium salts, 4266.

Sulphur, Trisulphides, new prep., 4850.
Sulphur sub-group, co-ordination compounds formed by tetrafluorides of, 3417.
Sumatrol, structure and stereochemistry, 5445.
Supinine, alkaloid from seeds of *Trichodesma zeylanicum*, R. Br., 484.
Surface tension of molten metal nitrates and nitrites, 468.
Sydnonones, chemical and physical properties, 3303.

T

Tannase, fractionation of, 1829.
Tannic acid, a probable component of (trigallic acid), 3231.
Tannin, Quebracho, occurrence of 2-benzyl-2-hydroxy-coumaran-3-ones in, 3234.
Tannins, Chinese, Turkish, Sumach, and Tara, constitution, 1842.
 of tara, *Caesalpinia spinosa* (Mol.) Kuntze, 3786.
 gallo-. Parts I—IV, 1829, 1836, 1842, 1854.
 introduction, 1829.
Tanshinones. Part I, prep. of an isomer of tanshinone-I, 5090.
Tantalum, di- π -cyclopentadienyl hydrides of, prep., 4854.
Tara, tannins of, 3786.
Taraxerol, ursane analogue of (isoursenol), prep., 2638.
Tartaric acid, tungstate and molybdate complexes with, 3691.
 (—)-di-*O-p*-toluoyl-, characterisation of amines by, 4675.
Tautomerism in the solid state. Parts I, II, 182, 1191.
Tazettine, stereochemistry of the hemiketal moiety of, 2485.
 treatment with acetic anhydride and sulphuric acid, structure of products, 1055.
t-Butyl chloride, hydrolysis of, kinetics, 1517.
group, effect of, in aromatic dinitration, 247.
peroxide, thermal and photochemical decomposition in anisole, 5239.
N-t-butylamine, *N*-methyl-, improved prep., 4226.
Teichoic acid from the walls of *Bacillus subtilis*, prep. of 4-*O*-(β -D-glucopyranosyl)-D-ribitol a degradation product of, 2180.
Teracacidin, new leucoanthocyanidin from *Acacia intertexta*, 499.
Terpene problem: isopropenyl and isopropylidene groups, 2353.
Terpenes, studies in synthesis of. Parts VI, VII, 3251, 4211.
p-**Terphenyl**, isomer ratios for the mononitration in acetic acid and acetic anhydride, 5156.
p-**Terphenyls**, new di- and tri-nitro-, prep., 1069.
Testosterone, 16 α -methyl- and 16 β -methyl-, prep., 4057.
Tetrabenzo-[2,2]-paracyclophane, 3741.
Tetralone: β -(8-Oxo-2-tetralyl)propionic acid and γ -(8-oxo-2-tetralyl)butyric acid, attempted cyclisation, 2520.
Tetric acid, γ -phenyl-, enol esters, mechanism of solvolysis. Parts I, II, 5421, 5430.
 γ -phenyl-, enol acetate, methanolysis of, 5430.
 γ -phenyl-, enol benzoate, conductimetric study of methanolysis of, 5421.
Thallium: Thallous-thallic reaction, evidence for a single-stage two-electron exchange, 5549.
Thenylamine, derivatives of, prep., reactivity, and pharmacology, 1291.
Thermochemical studies. Parts IV, VI, 2994, 5115.
Thermochemistry of organoboron compounds. Part VI, 2472.
Thermochromism of heterocyclic phenols, 182.
Thermodynamic properties of organic oxygen compounds. Parts II, III, 2236, 2241.
 treatment of electrolyte absorption by an ion-exchange resin, 4784.
Thermodynamics of ion association. Part VII—IX, 2215, 4367, 4458.
Thiadiazoles. Part XI, 1617.
Thiamine chloride hydrochloride, 6-methyl-, prep., 2595.
Thiazine analogues of 3-substituted rhodanines, prep., 3733.
Thiazole: Benzothiazole, nitration, quantitative study, 2825.
Thiazoles, infrared spectra, 3381.

Thiazole-4-carboxylic acid, 2-(1-amino-2-methylpropyl)-, racemisation and related studies, 3394.
Thiazolidine derivative, formation in aqueous solution from pyridoxal phosphate and L-cysteine, 4051.
Thiazoline: 3-Methylbenzothiazoline-2-thione, crystal and molecular structure, 4379.
Thioamides, prep. by extensions of the Kindler reaction, 1194.
 hydrogen bonding in, 957.
Thiocyanogen, thiocyanates, and isothiocyanates. Part I, 2447.
 chloride. Parts IV, V, 2428, 2436.
 chloride, reaction with aromatic hydrocarbons; heterolytic and homolytic substitution in benzene homologues, 2428.
Thioethers, kinetics and mechanism of carbanion-sulphenium fission in, 2402.
 carbon-sulphur fission in. Parts IV—VII, 223, 2393, 2397, 2402.
2-Thiohydantoin, 3-alkyl-1-arylsulphonyl-, prep., 4660.
Thioles from reduction of 2-bromo-1,1-di-*p*-alkoxyphenylethylenes by thiophenols, addition to 1,1-di-*p*-alkoxyphenylethylenes, 2684.
Thio-oxamides, infrared spectra, 1919.
 prep. by extensions of the Kindler reaction, 1194.
Thiophen compounds, physical properties and chemical constitution, 570.
 oxide, tetrahydro-, complexes with metals, 2078.
 Indeno(2',1'-2,3)thiophen, 3'-oxo-, Schmidt reaction with: structure of the product, 1408.
 So called "2-triacetylthiophen" (a boron compound), prep., 746.
Thiophens related to vitamin A, prep., 650.
Thiophenol, *p*-(*NN*-di-2-chloroethyl- and *p*-(*NN*-di-2-bromoethyl-amino)-, derivatives of, prep., 2375.
Thiophthalimides, prep., 5055.
2-Thiopyrones, prep. from pyrones, 4490.
Thiosmearbazones, hydrogen bonding in, 957.
Thiosuccinimides, prep., 5547.
Thiourea, reaction with dialkyl phosphites and trialkyl phosphates, 442.
S-(2-hydroxyethyl)-, derivatives of, 5191.
Thioxanthenes, some chemotherapeutic, physicochemical properties, 5381.
Thiyl radicals. Part I, 1304.
L-Threitol, reaction with acetone, 5095.
 di-*O*-benzylidene-, structure, 5011.
Thujopsis dolabrata, constituents of leaves of, 4247.
D-Thyronine, 3,5-dichloro-, prep.: an unexpected Walden inversion, 2651.
Thyronines, prep. from iodonium salts and derivatives of 3,5-disubstituted tyrosines, 2645.
Thyroixine and related compounds, prep. Parts XV—XVII, 2645, 2651, 2890.
Timbers, West African. Part IV, 3705.
Tin, tropylium complex halide salts of, 2320.
 halides, reactions with sulphoxides, 3224.
 Dibutyl- and diphenyl-tin radicals, 8-hydroxyquinoline complexes of, prep., 756.
 Dicyclopentadienyltin, infrared spectrum and structure, 547.
 Organotin cations occurrence of, 2585.
 Sn-O-As(V) linkages, preparation of monomers and polymers containing, 445.
 Stannane, kinetics of decomposition on a tin surface, 2569.
 Stannanes, aryltricyclohexyl- and aryltrimethyl-, rates of cleavage by aqueous-ethanolic perchloric acid, 542.
 Stannic chloride, comparison of aliphatic and aromatic carboxylic acids as Friedel-Crafts co-catalysts for, 3822.
 Stannous chloride dihydrate, crystal structure, 3954.
 Tetrachloro-1,4-bis(triethylstannyloxy)benzene, crystal and molecular structure, 5027.
Tin(II), chelates formed with certain amino-polycarboxylic acids, 2554.
Tin(II) nitrate, basic, prep., 1996.
Tin(II) oxide, red, prep., 839.
Tin(II) oxide [tin(II) hydroxide], hydrous, prep., 835.
 Tributyl- and triphenyl-stannyll derivatives of alkali metals, reactions of, 618.

Titanium, n-tetra-alkoxy- and n-alkoxy-chloro-derivatives, association of, 2947.
 cyclopentadienyl derivatives, substituted, 4619.
 tropylium complex halide salts of, 2320.
 Hexahalogenotitanates, ammonolysis of, 95.
 Titania, ion-free hydrous, calcination of, 1252.
Titration, spectrophotometric, of the bile pigments, 2276.
Toluene, [*o*- and *p*-³H₁]-, relative reactivities in detritiation, 4927.
p-(1,2-epoxyethyl)-, kinetics of reaction with benzylamine, 1708.
 2,3,4,5,6-pentafluoro-, and related compounds, prep., 3719.
Toluene-*p*-sulphonhydrazide, some unusual reactions, 4970.
***p*-Tolyl acetate**, Fries rearrangement catalysed by zirconium tetrachloride and stannic chloride, 3842.
Totarol, 6-hydroxy-(8-isopropylpodocarpane-6,7-diol), prep., 4425.
 3-Oxototaryl methyl ether, prep., 3319.
***t*-Pentyl alcohol**, decomposition in gas phase, catalysed by hydrogen chloride, 1392.
Transaminase, glutamic-aspartic, apoenzyme of, isolation from pig heart muscle, 1698.
Transamination, Parts I, II, 1698, 4235.
Transglycosylation of *N*-arylhexosylamines and arylamines, paper-chromatographic investigation of, 320.
Transitions, singlet-triplet, magnetic perturbation of. Part V, mechanism, 1987. Part VI, 2566.
Triazines: Benzo-1,2,3-triazines, substituted, reactions of, 4930.
Triazole carboxylic acids, apparent dissociation constant of, 3146.
1,2,4-Triazoles. Part II, 518.
 3-alkyl-5-aryl-, prep., 518.
 3-amino-, preparation of tetra-azaindenes from, 3046.
Trichodesma zeylanicum, R.Br., seeds of, alkaloid (supinine) from, 484.
Trigallic acid, probable component of tannic acid, 3231.
1,3,5-Trioxan, pyrolysis, 1403.
Triterpene, new, from Hong Kong Ericaceae, 551.
 constituents of the fruits of the osage orange (*Maclura pomifera*). Part II, 2330.
Triterpenes and related compounds. Parts XXXVIII—XLI, 646, 2725, 3891, 5353.
 in *Polyporus anthracophilus*, 1654.
Triterpenoids. Part XXV (D. H. R. Barton *et al.*), 255. Part LVIII (F. S. Spring *et al.*), 2638.
 pentacyclic, with diene unsaturation in ring c, photochemistry, 3313.
Trögers base as a solute in benzene, dipole moment, molar Kerr constant, and space formula of, 4144.
Tropane alkaloids, stereochemistry. Parts XIII, XIV, 3219, 3222.
 (-)-**Tropic acid**, absolute configuration, 3222.
Tropylium complex halide salts of boron, aluminium, iron, titanium, and tin, 2320.
 isocyanate (*alias*), [actually *NN'*-di(cyclohepta-2,4,6-trienyl)urea], prep., 482.
Tropylium- and cycloheptatriene-metal complexes. Parts I—III, 3475, 3479, 3484.
Trypanocides, new, search for. Part VI, 4041.
Tryptamine, 5-hydroxy-, prep., 2919.
Tryptamines, 5-fluoro-, *N*-alkylated, prep., 5418.
Tumour inhibitors from plant sources. Part I, 2599.
Tungsten, di- π -cyclopentadienyl hydrides of, prep., 4854.
 oxytetrafluoride, vapour pressure, 1568.
 trioxide, fluorination by selenium tetrafluoride, 3549.
 (PW₁₁O₄₀)³⁻ and related ions, structure, 3796.
 Tungstate complexes with glycollic and mandelic acid, 4732.
 Tungstate complexes with tartaric, malic, and succinic acid, 3691.
 Tungstate solutions, acidified, quantitative analysis of, 5317.
Tutin, structure, 3006.
Tutin and picrotoxin. Parts XI, XII, 3000, 3006.
Tyrosine, prep. of di-*p*-(2-amino-2-carboxyethyl)phenyl peroxide from, 3193.
Tyrosines, 3,5-disubstituted, prep. of thyronines from, 2645.

U

Ubiquinone, prep. of quinol monophosphate from, 1808.
Uracils, acetyl-, prep. from amines and amino-acids, 3254.
Uranium, reaction with solutions of alkylammonium nitrates in dinitrogen tetroxide, 2987.
 and uranium compounds, reactions with nitrosyl chloride, and with liquid nitrosyl chloride-dinitrogen tetroxide mixtures, 2490.
 trioxide, fluorination by selenium tetrafluoride, 3549.
 Alkylammonium uranyl nitrates, 2987.
 Bis(dibenzoylmethanato)uranyl complex, heats of solvation of, 4250.
 Uranium(IV) nitrates, 4060.
 Uranyl, co-ordinative power of. Part IV, 4250.
 Uranyl sulphate, adsorption from 20% methanol by an anion-exchange resin, 1819.
Urea, derivatives of, heterocyclic compounds from. Part II, 5137.
NN'-di(cyclohepta-2,4,6-trienyl)-, *alias* tropylium isocyanate, prep., 482.
Uric acid riboside (ribosyluric acid). Part I, isolation and reinvestigation of structure, 963.
Uridine-5' phosphate, L-arginyl-L-alanyl-L-arginyl-L-alanyl, prep., 2053.
Uronic acid materials, studies on. Part IV, 5230.
Uronic acids, aqueous decarboxylation and decarboxylation of pectic materials during extraction, 5230.
Ursane analogue (isoursenol) of taraxerol, prep., 2638.

V

Valeric acid, γ -amino-, steric course of lactonisation following deamination, 3278.
Valeridine, absolute configuration and simplified prep., 3219.
Vanadium, quinquevalent, oxidation of organic compounds with. Parts VII, VIII, 630, 4757.
 quinquevalent, compounds with orthophosphate, 3211.
Veratraldehyde, some experiments based on, 3151.
Verdinoid pigment, prototypy of bilirubin to, 2268.
 (\pm)-**Vernolic acid**, prep., 5270.
Vinyl: Divinylmercury, pyrolysis, 2580.
Vinylideneamine, *N*-ethyl-2,2'-dimethylsulphonyl-, crystal and molecular structure, 2801.
Virgilia oroboides gum. Part II, isolation of oligosaccharides after partial hydrolysis, 4892.
Virial coefficients, second, of nitromethane, 2247.
Vitamin A, prep. of thiophens related to, 650.
Vitamin K₁, prep. of quinol monophosphate from, 1808.
Vitex agnus castus seeds, constituents of. Part I, 2523.

W

Walden inversion and steroids. Parts XLVII—XLIX, 1583, 3261, 3271.
Washburn numbers in the methanol-water-hydrochloric acid system at 25°, 5308.
West African timbers. Part IV, 3705.

X

Xanthate, sodium ethyl, reactions with ethanol and with water, 117.
Xanthohumol (a chalcone), structure, 1021.
Xylans, degradation by alkali, 3667.
Xylene, perfluoro-*o*- and *p*-, prep., 1574.
 Poly-*p*-xylylene and related polymers, prep., 1604.
D-Xylose, 4-*O*- β -D-xylopyranosyl- and 3-*O*-methyl-4-*O*-(β -D-xylopyranosyl)-, prep., 3674.

Z

Zinc: Dichloro(ethylenediamine)zinc, infrared spectrum and structure, 477.